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Drilling Activity Already Shows Results

Gain in daily production in United States week ending Jan. 26, 10,641 bbls.

All But Two Areas Record Slight Increases in Production. Burbank Operators Remove Last Restrictions

Average daily production in United States week ending Jan. 26, 1,894,772 bbls.

By Andrew M. Rowley

Under the stimulus of better price conditions, a far brighter outlook and a continued strong demand for crude, drilling activity in the various oil fields of the United States began to show results during the past week and small increases in production were recorded in all fields of the country with the exception of the Wyoming-Montana area and in some of the eastern fields where weatner conditions hampered operations. The total estimated daily average production increased 10,641 barrels during the week, bringing the total daily output of the United States to 1,894,772 barrels, still 425,000 barrels daily less than the peak reached last July.

Another advance of 25 cents a barrel was made in the eastern fields during the past week, bringing the price of the top grades of Pennsylvania oil to $4.25 a barrel, the high point of 1923 which was reached February 15 last. Gulf Coast producers were made glad by another raise in that area of 15 cents a barrel. Crude oil prices have been increased materially since the first of the year and operators feel further advances will be made soon.

Demand for Crude Growing

The promptness with which pipe line companies make connections to wells is indicative of the growing demand for crude in all sections. Another strong feature is the fact practically all agreements regarding curtailment of operations have been abrogated. On Monday of this week operators in the Burbank Field decided to abolish their agreement entirely and, as a result, unrestricted drilling is in progress in that field now. On January 10 Burbank operators removed restrictions on drilling outside locations. It was agreed at that time to meet again on February 10 to consider the situation and determine whether to continue that agreement or lift it.

The demand for crude coupled with the rather poor showing of wells completed in the Burbank since the restrictions were lifted partially on January 10, together with the announcement of a big sale of Osage leases in March prompted operators to decide at this time to drill the inside locations on their properties. Operators in the Hewitt Field in Oklahoma have had an understanding for some time regarding the shutting in of wells when they reached the sand. That, also, is a thing of the past and as a result three good producers were brought in there early this week, one making 170 barrels an hour, a second, 110 barrels an hour, and the third, 90 barrels an hour.

Burbank Output Climbing

Production of the Burbank Field again showed an increase of about 10,000 barrels a day during the past week. While wells completed there are not as large as some operators had expected, they are good producrs and there were quite a number of them near completion depth. There were 32 inside wells shut down under the agreement and these now will be completed.

Indications are production in the Gulf Coast area will show an increase during this week as there is renewed activity in that section and the completions are showing up somewhat better. On Tuesday, a well of the Republic Production Company on the east side of the dome at Hull was flowing 10,000 barrels of pipe line oil. This completion will serve to hearten operators in that district.

In the San Joaquin Valley in California where operators have been idle during practically the entire past year owing to low prices for crude of the gravity produced in that area, operations are to be resumed at once as a result of the 25-cent advance in crude prices posted in California recently. The heavy crude is used greatly for fuel oil and operators feel they can operate now that a price of 85 cents a barrel has been posted.

Santa Fe Springs Still Dropping

The production of the Santa Fe Springs Field continues to decline, another drop of 7,000 barrels daily being registered during the past week. This brings the output down to more than 200,000 barrels a day less than the field was producing at its peak only a few months ago. Production in the older fields of the State continues to show a slight increase, the gain last week being 8,750 barrels daily. Torrance, of which so much was expected up until very recently, is only able to maintain its rate of output by its weekly completions. It is expected the production will show declines when the completions fall off although there are a sufficient number of wells drilling and near the sand to insure a fairly steady output for the field for two or three months. Long Beach continues to hold its own remarkably well. On several occasions it seemed as if the output of the field must drop but the bringing in good producers always managed to hold the production up to a fairly stationary figure. Completions at Santa Fe Springs are showing a much smaller initial output than formerly while the number of new wells is steadily becoming less.

There is considerable speculation as to developments at Compton. A number of operators are disappointed over the showing made by the General Petroleum Company's No. 1 Gardena, although the status of the well is believed by others to be as good as could be expected. The company drilled the well just 15 feet into the sand and does not seem in a hurry to complete it, although despite pessimistic reports concerning the test, the company has begun laying a pipe line from the field to its tank farm at Athens. The well is flowing water and oil by heads and the water is said to be salty. The well is of especial importance because, should it prove to be a commercial producer, it might extend the field to the north and mark the opening up of another field.

May Stop Shipments to East

One of the most important features of the present situation in California and the outlook in that State as far as the petroleum industry of the entire country is concerned, is the fact it seems assured now that within the near future there will be material reduction in the quantity of crude shipped by tankers to Atlantic Seaboard markets. Shipments of California crude to eastern markets, thereby reducing the amount of oil these markets required from producers in other sections of the country, was the chief cause of the depression of the past year in the Mid-Continent and eastern fields. Mid-Continent producers could not compete with the flood of cheap oil from California and were forced to shut down their operations. Refiners in the Mid-Continent were in the same condition as Pacific Coast gasoline supplied trade usually covered from Mid-Continent territory.

California production is approaching the point where it will be needed in California for the requirements of that State. There is more than 90,000,000 barrels of crude in storage in California but unless a new field is developed within the next couple of months in Pacific Coast territory, it is the concensus of opinion the larger companies will be drawing upon their stocks to a great extent within a comparatively short period and when that condition obtains, it is almost a certainty shipments by tanker will drop to a minimum and become too small to have any serious effect upon other sections of the country.

PRODUCTION IN THE UNITED STATES

Estimated daily average production in the oil fields of the United States for the week ended January 26, and a comparison with the previous week follows:

Field:	Jan. 26	Jan.19
Oklahoma—Northern Fields:		
Tonkawa	39,875	42,180
Burbank	87,100	77,256
Other Osage Fields	31,740	31,775
Cushing and Shamrock	24,100	24,075
Bristow and Eastern Bristow	45,300	45,465
Northern Miscellaneous	89,560	90,120
Southern Fields:		
Healdton	17,015	17,050
Hewitt	22,450	21,075
Southern Miscellaneous	27,450	27,725
Total Oklahoma	384,590	376,721
Northern Louisiana	52,605	52,440
Arkansas—		
El Dorado and Calion	15,435	15,510
Smackover Light	22,965	22,500
Smackover Heavy	71,150	68,925
Stephens	2,775	2,980
Total Arkansas	112,325	109,915
North Central Texas	108,467	106,175
East Central Texas (Mexia, Currie, Corsicana, Powell)	135,950	132,950
Kansas	71,450	71,400
Total Mid-Continent Area	865,387	849,601
Gulf Coast	85,945	84,855
Eastern	108,425	108,650
Wyoming-Montana	146,265	153,025
California—		
Santa Fe Springs	133,000	140,000
Long Beach	228,000	229,000
Huntington Beach	65,000	65,000
Torrance	35,000	35,000
Remainder State	227,750	219,000
Total California	688,750	688,000
Total United States	1,894,772	1,884,131

Increase, 10,641 Barrels

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What Happened During 1923 and Why

Overproduction of Entire Country Not So Serious As Fact Most Of It Came From One Section Which Entered New Markets

By Andrew M. Rowley

Many things are done under stress of excitement or unusual conditions which appear quite odd when normal conditions again obtain. The old story of the man who, during a fire, threw the plate glass mirror out of the second-story window onto a cement sidewalk and then very carefully carried a feather mattress down the stairs, is based on fact. It is not a hard matter for persons both in and out of the oil business to sit back serenely now and view the events of the manner and fall of 1923, the most hectic period in the history of the petroleum industry, and conclude there was not so much overproduction and possibly there was too much cry of "wolf."

But in any consideration of conditions at this time or any other time, one great and fundamental fact must be faced—the oil business is entirely different from any other industry and always will be as long as it is possible for anyone with sufficient funds to go out and obtain leases and drill wells. When politicians and others view the oil industry in the same light as other business enterprises, they overlook this fact and, as a result, their deductions are basically wrong.

Other Industries Different

Vast deposits of iron ore may be discovered but the steel industry is not confronted by an overproduction problem because it requires more than drilling a hole to the ore to get thousands of tons of it to the surface and the mills. When the farmer finds the market overstocked with a certain product, he can plant something else on the same ground he had used to raise the crop for which there was not sufficient demand. So it is with every other line of business. The supply can be controlled and it is not possible to increase the output materially without vast preparations far in advance.

How different it is in the oil business. A well is drilled which strikes an oil pool. Immediately that oil comes to the surface and is thrown on the market. At the same time a period of intensive development is inaugurated which results in thousands of barrels unexpectedly being added to the country's production. Take the Powell Field in Texas as an example. In the first five months of last year it produced 30,000 barrels of oil or less than 200 barrels a day. The McKie well was drilled and that one field produced more than 30,000,000 barrels of oil during the last seven months of the year, just 1,000 times as much as it had during the first five months. Such a thing is absolutely impossible in any other industry.

Because of the fact the petroleum industry is so radically different from any other business, facts and figures relating to periods which have passed definitely must be considered in a different way than those relating to any other enterprise. These statistics must be considered as they relate to different areas of the United States and what happened in each of these areas must be given attention. It means little or nothing, in speaking of a period which is definitely passed, to say production was so much and consumption so much, hence such and such should have been the case. What must be taken into account is what happened in the three great main divisions of the country into which the oil business naturally divides itself—the Pacific Coast area, the Rocky Mountain and Mid-Continent, with the Gulf Coast and the section east of the Mississippi River. Also what effect did events of one area have on conditions in the others.

Taking the figures on production and consumption for the entire United States for 1923, as compiled by the United States Geological Survey, we find, on comparing them with the figures from the same source for 1922, that the excess of crude production and imports over consumption and exports in 1923 was only 12,699,352 barrels more than the excess during 1922. At the rate of production during the latter part of the year, that excess represented less than one weeks' output of crude. No oil man would believe that one week's production would throw the entire petroleum industry of the United States into the depression experienced during the past year. The figures referred to follow:

Month—	1923 Production	1923 Consumption	1922 Production	1922 Consumption
January	52,786,882	56,209,975	43,696,000	45,193,000
February	48,056,955	49,690,984	41,314,000	39,933,000
March	56,896,325	57,590,994	47,188,000	47,369,000
April	58,058,549	55,698,000	46,167,000	41,258,000
May	61,608,897	58,020,003	47,002,000	48,846,000
June	61,702,456	54,396,000	46,087,000	48,449,000
July	65,435,832	61,194,496	47,134,000	50,877,000
August	67,103,701	62,446,989	47,059,000	54,984,000
September	66,013,150	60,445,980	45,805,000	48,166,000
October	66,612,428	63,412,019	48,410,000	56,159,000
November	64,377,308	61,203,990	48,027,000	54,363,000
December	*61,000,000	*60,000,000	50,642,000	56,845,000
Total	729,652,782	700,309,430	557,531,000	592,442,000

*Estimated.
Exports of crude petroleum, 1923, 16,400,000 bbls.
Imports of crude petroleum, 1923, 82,000,000 bbls.
Total crude available, domestic production plus imports, 811,652,782 bbls.
Total crude requirements, domestic consumption plus exports, 716,709,430 bbls.

Comparison With 1922

	1923	1922
Domestic production	729,652,782	557,531,000
Imports	82,000,000	127,308,000
Crude available	811,652,782	684,839,000
Requirements		
Consumption	700,309,430	592,442,000
Exports	16,400,000	10,153,000
Total	716,709,430	602,595,000

Excess of production and imports over consumption and exports in 1923, 94,943,352 bbls. In 1922, 82,244,000 bbls. Difference, 12,699,352 bbls.

Another table shows the figures on production for the two years in a different form, being for each State instead of by months. These figures are those compiled by The Oil and Gas Journal. That table follows:

Total Gross Production by States

State—	1923	1922
California	263,728,895	139,626,876
Oklahoma	165,013,685	148,746,845
Texas	132,331,998	120,145,856
Wyoming	42,386,863	26,924,400
Arkansas	38,647,863	16,138,375
Kansas	29,812,123	32,387,646
Louisiana	24,708,993	35,645,850
Illinois	8,726,000	9,429,000
Kentucky	8,077,000	9,014,300
Pennsylvania	7,285,000	7,513,000
Ohio	7,086,000	6,786,000
West Virginia	6,410,000	7,006,000
New York	1,250,000	1,004,000
Indiana	1,042,500	1,092,000
Colorado	62,500	96,900
Tennessee	7,500	9,800
Total	739,254,637	563,882,878
Total, 1921	472,391,512	
Total, 1920	444,804,682	

Different Story Shown

A different story is shown when the production is considered by States rather than for the country at large. While the production of the entire country in 1923 showed an increase of 30 per cent over 1922, the output of California was nearly 89 per cent greater. That State produced 124,102,049 barrels more crude in 1923 than it did in 1922. It was that abnormal increase which caused the depression in the entire industry. It was not that the excess production of the entire country was 12,699,352 barrels greater than the excess in 1922, but what caused the trouble was that enormous surplus in California being thrown, for the first time in the history of the industry, into other markets of the United States which heretofore had drawn their supplies from other sections than California. It was those areas, which formerly had supplied these markets, which suffered most by reason of having their sources of disposing of their product taken away from them.

The outlook for the industry seemed bright at the beginning of 1923. California was producing a greater quantity of oil than it had but its average daily output in January was only 530,885 barrels. That was not much more than the requirements of the State. The major purchasers of crude in every field of the United States, except California, began to advanced their posted prices and price advances were the rule during January and February in every field of the country, except California. In that State, prices were lowered on January 6, due to the fact that production there was going into storage and the exporting of crude had not fully started.

Price Advances General

In the Mid-Continent territory, prices in Oklahoma, Kansas and Texas ranged from 90 cents to $1.80 on January 1. Prices were advanced on each grade 10 cents six different times during January and February. On the Gulf Coast, prices were raised from $1.25 to $1.75 between January 1 and March 15. The same conditions prevailed in the Eastern fields, in Wyoming and Montana, and in Louisiana and Arkansas, substantial increases in price being made during the first six months of the year.

In April the reaction began to set in. California's production was mounting rapidly and without any signs of reaching a peak. The average daily output of that State in April was 689,865 barrels, or 158,980 barrels a day more than it had averaged during January. And of the greatest importance to all other sections of the country, this surplus oil was not all being placed in storage in Califor-

(Continued on Page 177)

INDUSTRY CAN COUNT SOME GAIN FROM 1923, PRESIDENT TEAGLE FINDS

By W. C. Teagle
(President, Standard Oil Co. of New Jersey)

The closing of an old year and the opening of a new marks a time when one naturally balances the prophecies and experiences of the past and, no matter how great the gap may have been between prognostication and performance, one quite as naturally follows habit by venturing new predictions for the coming year.

W. C. Teagle

But if ever a year in the history of the oil industry demonstrated the futility of prophecy that year was 1923. There probably was no period more trying to those engaged in the oil industry, large and small. No one had any monopoly of trouble and anxiety. Economic conditions dominated the situation bringing advantage to none and permitting none to escape injury. Yet what could have been more serene than the outlook on January 1, 1923? I am free to admit that the events of the summer just past were very far from my expectations at the opening of the year and with a memory of that fact I am very loath to attempt any new forecasting for the year 1924.

I will say, however, that the oil industry as a whole is recovering from the strenuous and unusual conditions of a few months ago and promises to be much more nearly stabilized during the next few months. Furthermore, we have seen the uses of petroleum products grow and the market expand. We have seen some very material improvements in the systems of handling products, both in the refineries and in the markets, and we have seen those engaged in the oil business become better acquainted with one another and recognize more fully the commonality of interest which should guide and dominate its entire personnel.

These things, I believe, are clear gain out of a difficult season and I expect a better year for 1924.

24,438 Wells Were Completed in 1923

Initial Production 6,015,100 Barrels. Oil Wells Number 16,206 and Average 371 Barrels in First Day Output

By James McIntyre

Complete figures on the amount of field work done in the United States in 1923 unfold a story of big well averages and big initial production such as the industry has never before seen, or expected to see.

In all the divisions of the United States where oil is being produced or sought there were 24,438 wells completed last year. Of this number 16,206 were oil wells, 2,349 were gas wells and 5,883 were dry holes. The oil wells averaged 371 bbls. in initial production per well. In 1922 the number of completions was 24,658. of which 17,318 were oil wells, 2,011 gas wells and 5,329 dry holes. The oil wells that year averaged 244 bbls. per well in initial production.

Of the wells completed in 1923, 66.31 per cent were oil wells, 9.6 per cent were gas wells and 24.09 per cent were dry. In 1922 the percentage of oil wells was 70.27. The gas wells represented 8.16 per cent of the completions and the dry holes 21.57 per cent.

California's Big Year

The year's work in California, the most sensational field in the country last year and the most disturbing, as well, resulted in the completion of 980 oil wells, the combined initial production of which was 1,376,279 bbls. In 1922 the completions numbered 801 and the initial production 524,397 bbls. indicating an increase of 179 in completed wells in 1923 and an increase of 851,872 bbls. in initial production. The 980 oil wells averaged 1,404 bbls. in initial production per well.

Oklahoma's New Record

The Oklahoma fields completed 5,833 wells, as against 6,148 in 1922, showing a decline of 315 in new wells, but the initial production of 1,277,936 bbls. last year exceeded that of the previous year by 87,771 bbls. The oil wells completed in 1923 numbered 3,515 and they averaged 363 bbls. in initial production, the best average yet recorded in Oklahoma. The average for 1922 was 287 bbls. per well and the best record for average initial production previously made was in 1915 when it reached 295 bbls. The development of the Tonkawa and Burbank Fields and their high tide of production came in 1923 and important new developments were made in Creek County. The year closed with no new fields of importance started and with Burbank as the only important field not yet pretty fairly defined.

An Unexpected 30,000,000 Barrels

Next to the development of California the Powell Field in Navarro County, Texas, in the East Central Texas division was the feature of the year. Most of the 771 wells completed in East Central Texas were in the Powell district, or the territory just outside of it, and most of the 1,619,527 bbls. initial production credited to the division came from Powell. The Mexia Field was practically dead all year and Currie with the exception of a scattering of good wells through the year, cut little figure in the total. Powell was the center of all operations. It reached its best days in November. The 771 completions in the East Central Texas division included 635 oil wells which averaged 2,550 bbls. in initial production per well, but the wells were notably short lived as gushers which diminished the importance of the unusually large first day production. At the close of the year Powell was nearly all drilled up and altogether defined. In the few months the field held a part of the limelight it produced over 30,000,000 bbls. of oil which no one up to the latter days of last May, when the real development started, ever thought would be unearthed. There were fewer completions in East Central Texas than in 1922, the decrease having been 93, but the increase in new production was 868,757 bbls.

Smackover Extended

Arkansas made a noteworthy record in 1923 with 1,669 completions, a gain of 604 over the year before; 826,701 bbls. initial production, a gain of 388,141 bbls. over 1922; 230 dry holes, or 139 more than in the year before, and 85 gas wells, 39 in excess of 1922. The oil wells numbered 1,354 and they averaged 611 bbls. per well in initial production. The extension of the Smackover Field into Union County and the big production from that field was the outstanding feature of the work in Arkansas.

North Texas Operators Active

Operators in North Central Texas did not permit California or Powell to deter them from development work, and in the past year they completed 2,666 wells, or 541 in excess of the completions of 1922. All this extra drilling, however, yielded only 185,826 bbls. of initial production, 59,282 bbls. less than in 1922. There were 861 dry holes drilled and 81 gas wells, or 261 more dusters and 19 more gassers than in the previous year. The average initial production per well was lowered from that of the year before, the 1,724 oil wells averaging 108 bbls. The 1,463 oil wells finished in 1922 averaged 168 bbls. per well.

The Gulf Coast region and south central and southwestern Texas showed 1,609 completed wells, 91 more than in 1922, but a decrease in initial production, the total of 428,945 bbls. being 122,422 bbls. below the record of the previous year. The 1,117 oil wells averaged 384 bbls. per well in first day production, while in 1922 the 940 oil wells averaged 592 bbls. per well in initial production.

The North Louisiana Fields made a very poor showing in 1923. When Haynesville was defined and drilled up it marked the finish of Louisiana as an important scene of field developments. Only 481 wells were completed last year, a falling off of 239, and the initial production fell to 18,619 bbls. or 354,259 bbls. less than in 1922. The 127 dry holes were 23 fewer than in 1922. It was a good year for the gas man and 143 gas wells were completed, or 76 more than in 1922. The average initial production per well of the 201 oil wells finished in 1923 was 92 bbls., while in 1122 the 493 oil wells averaged 756 bbls. per well.

Montana a Disappointment

Montana, a field of bright promise when the year opened, but which was a disappointment to many operators and prospective operators before the year was over, saw the completion of 248 wells, an increase of 164 over the record of 1922. The new production was 14,68 bbls., a gain of 3,718 bbls. over 1922. There were 75 dry holes, or 48 more than in the year previous, and 11 gassers, 7 more than in 1922. The average production of the 162 oil wells was 91 bbls. while in 1922 the 53 oil wells drilled averaged 207 bbls. per well in their initial stage.

In the other divisions there was little difference in the amount of field work in 1923 and in the year before.

SUMMARY OF OPERATIONS IN ALL THE FIELDS IN THE UNITED STATES IN 1923 AND 1922

		Comp.	Prod.	Dry	Gas	Oil Wells	Av. Int. Prod.
Eastern	1923	4,528	18,060	711	850	2,967	6
	1922	4,917	27,236	822	639	3,456	7.9
Central Ohio	1923	642	1,657	193	365	84	19.7
	1922	906	2,104	214	387	305	6.9
Lima	1923	697	13,151	75	17	605	21.7
	1922	522	7,406	61	12	449	16.5
Michigan	1923	1	0	1	0	.....	...
	1922	None	.....	.....	.....	.....	...
Indiana	1923	175	4,411	49	4	122	36.2
	1922	231	3.300	55	6	170	19.4
Kentucky	1923	1,943	33,692	471	80	1,392	24.2
	1922	2,268	32,440	408	69	1,791	18.1
Tennessee	1923	54	1,684	41	1	12	140
	1922	32	75	15	1	16	4.7
Mississippi	1923	13	0	12	1	.....	...
	1922	None	.....	.....	.....	.....	...
Georgia	1923	2	0	2	0	.....	...
	1922	None	.....	.....	.....	.....	...
Illinois	1923	260	5,014	94	18	148	33 9
	1922	341	5,929	87	2	252	23.5
Kansas	1923	1,405	61,372	535	63	807	76.1
	1922	1,640	74,393	497	86	1,057	70.4
Oklahoma	1923	5,833	1,277,936	1,731	587	3,515	263
	1922	6,148	1,190,165	1,428	571	4,149	287
N. Central Tex.	1923	2,666	185,826	861	81	1,724	108
	1922	2,125	245,108	600	62	1,463	168
E. Central Tex.	1923	771	1,619,527	133	3	635	2,550
	1922	864	750,770	300	16	548	1,370
Gulf Coast	1923	1,609	428,945	492	...	1,117	384
	1922	1,518	551,367	533	45	940	586
North Louisiana	1923	481	18,610	137	143	201	92
	1922	720	372,869	160	67	493	756
Arkansas	1923	1,669	826,701	230	85	1,354	611
	1922	1,065	438,560	91	46	928	473
Wyoming	1923	451	126 545	40	37	374	338
	1922	472	193,900	36	19	417	465
Montana	1923	248	14,688	75	11	162	91
	1922	84	10,970	27	4	53	207
Colorado	1923	2	500	0	1	1	...
	1922	.....	.....	..	.		...
Utah	1923	1	0	0	1	...	...
	1922	4	0	4	0	...	...
New Mexico	1923	7	500	0	1	6	83
	1922	...	.....	.....	.....	...	.....
California	1923	980	1,376,279	.....	.....	980	1,404
	1922	801	524,397	.....	.....	801	655
Total all fields	1923	24,438	6,015,100	5,883	2,349	16,206	371
	1922	24,658	4,226,119	5,329	2,011	17,288	244
Difference		220	1,788,981	554	338	.....	...
	1921	21,775	2,827,809	5,013	2,135	14,027	200

SHOULD STUDY WORLD CONDITIONS—SINCLAIR

By H. F. Sinclair

Chairman, Sinclair Consolidated Oil Corp.

Complying with your request for some word of greetings to the industry, to be published in your annual number, January 31, I might put forward the suggestion that we give more consideration to world conditions in studying the industry's problems rather than to purely local trends.

Mr. and Mrs. Harry F. Sinclair on the eve of their departure for Europe.

In the face of steadily rising demand throughout the world, the industry was thrown into a state of depression by the mere fact that we were temporarily producing more oil than we could immediately distribute. Who was benefited? Nobody. Who was hurt? The entire American petroleum industry. Will the experience be repeated? Perhaps, unless we've learned the lesson.

A. P. I. STATISTICIAN RESIGNS TO JOIN OIL AND GAS JOURNAL STAFF

L. M. Fanning has resigned as director of the Division of Publicity and Statistics of the American Petroleum Institute and effective February 1, joins The Oil and Gas Journal as special staff representative.

Mr. Fanning has for a long time been identified with the petroleum industry. In the financial newspaper field, he first attracted attention by his analytical articles devoted to the financing side of oil.

While retaining his interest in this phase, he developed a keen liking for and proclivity toward the industrial and economic departments of the business and previous to his connection with the institute was a conspicuous contributor to petroleum literature. In connection with his work on the Institute he has furnished information on probably every phase of petroleum activity to writers and economists, this being one aspect of the service character of the duties of the important post he has just relinquished. That he has supplied information, general, specific, statistical and otherwise to those in the industry need not be mentioned, as there are few who have not availed themselves at one time or another of Mr. Fanning's peculiarly broad and searching store of oil information.

In addition to his writing in trade journals, Mr. Fanning has contributed articles to many newspapers and magazines. He wrote the treatise on "Petroleum" in the three new volumes of the eleventh edition of the Encylcolpedia Britannica, succeeding in this task the late Sir Boverton Redwood, who contributed the article in the eleventh edition.

Mr. Fanning owes much of his success in his particular field to a varied, practical experience in newspaper work. He was born in North Dakota, removed to Minneapolis and thence to New York, and at 18, after education in the public schools of New York, preparatory school and a taste of Princeton University, began to satisfy a wanderlust which took him into reportorial and editorial work on newspapers from New York to the Pacific.

He was assistant telegraph editor of the Augusta, (Ga.) Chronicle, telegraph editor of the Ashville, (N. C.) Citizen, correspondent for some dozen papers in the old South, managing editor of the Yakima, (Wash.) Herald and for about five years a reporter on the New York Herald.

Going into financial work in New York in 1912, Mr. Fanning served with the New York News Bureau for several years, first becoming interested in petroleum at this time. He was later associate editor of Daily Financial America (New York), and while in this capacity issued the first petroleum edition ever offered to Wall Street. Mr. Fanning served as New York correspondent for several important publications, writing authoritatively for tobacco, telephone, oil and banking periodicals.

He was New York correspondent of the Fuel Oil Journal (now the Oil Trade Journal), then published in Houston, Tex., for several years. When the Oil Trade Journal moved to New York in 1917 Mr. Fanning went with it as financial editor. He remained with the Oil Trade Journal until he was called to the American Petroleum Institute in September, 1920, to organize the Division of Publicity and Statistics.

He initiated and built up the Institute's comprehensive information records. Mr. Fanning established the institute's weekly report on estimates of daily average crude oil production, as well as other reports now familiar to the industry.

During his tenure of office the Institute gained prestige as a clearing house for petroleum information and its reports developed a nation-wide international circulation.

Mr. Fanning is not only well known to general newspaper men in this country and in England, but has a thorough acquaintance among members of the petroleum press. His handling of publicity for the trade press at all four of the annual meetings of the Institute has been notably skillful and effective, and his personal attention to demands has been favorably commented upon by all members of the trade press who have come in contact with him.

In his familiar field of investigation and writing, Mr. Fanning may be expected to contribute substantially to the study and solution of the big problems facing the industry. Through the columns of The Oil and Gas Journal, he will have an opportunity of continuing service to the industry and have full play for productive ability resulting from his peculiar training and wide acquaintance.

President Coolidge Announces Inquiry Into Naval Leases

WASHINGTON, D. C., Jan. 29.—Edward L. Doheny, president of the Pan-American Petroleum and Transport Co., the Mexican Petroleum Co., Ltd., and other large oil corporations, appearing voluntarily before the Senate investigating committee, said that in November, 1921, he lent $100,000 to Albert Fall, at that time Secretary of the Interior in the Cabinet of President Harding. Negotiations for the leasing of the Naval oil reserves in the West resulted, in December, 1922, in the Doheny interests securing control of the field in the Los Angeles district, officially known as Naval Reserve No. 1.

Mr. Doheny swore the loan was in no manner, shape or form, involved in the leasing to his company of the California field. He had known Mr. Fall for more than 30 years and the $100,000 represented, he explained, just a loan from one old friend to another.

Mr. Fall, he declared, in a broken voice, had suffered the loss of two of his children, his financial fences were badly in need of repair, and when the chance came he lent him the money "to ease his mind."

Mr. Doheny, in answering a question, as to the repayment of the loan to Mr. Fall said he expects to give Mr. Fall employment in connection with the Mexican operations of the Doheny interests. Mr. Fall, he said, is in his opinion, one of the best posted men on Mexican conditions.

Colonel J. W. Zevely, personal attorney of Harry F. Sinclair, informed the Senate committee investigating the Teapot Dome oil lease that in June or July of last year Mr. Sinclair had loaned $25,000 in Liberty bonds to Mr. Fall.

Mr. Zevely said he did not know what Fall did with the proceeds of the bonds, but he had heard he wanted the money to buy some ranch properties near Three Rivers, N. M. Several months subsequent to the transfer of the bonds Fall gave a note to Zevely which the latter said he thought bears interest at the rate of 6 per cent. He indicated the loan was made without security.

It was suggested in a written memorandum submitted to Mr. McNab on behalf of Mr. Doheny, that President Coolidge be authorized to appoint a committee of experts to inquire into all phases of the lease of Naval Reserve No. 1 and that if the investigation disclosed "that at the time of the making of the contracts they were not wise, desirable and advantageous for the Government to make and the very best the Government could have obtained," Mr. Doheny will direct the Pan-American Petroleum and Transport Co. to reconvey the property to the United States.

In a statement from the White House the President declared that "counsel will be instructed to prosecute these cases in the courts, so that if there is any guilt it will be punished; if there is any civil liability it will be enforced; if there is any fraud it will be revealed, and if there are any contracts which are illegal they will be canceled."

Mr. Sinclair Cables

H. F. Sinclair has cabled Senator Lenroot commending President Coolidge's action. Mr. Sinclair says he welcomes the "judicial determination of these questions in the lawfully constituted courts of our country at the earliest date possible."

"On five different occasions," says the message, "I have appeared before your committee. I have given you every fact or circumstance of a fact you have inquired about from me and was thereupon discharged by you from further testimony. It was not until you told me that I was discharged from further testimony that I came to Europe.

"I came here on a business matter. As soon as I can expedite my business I shall return.

"I have stated before your committee that neither I nor the companies with which I am connected, have ever given Secretary Fall or any representative of the Government any money or any consideration whatsoever in connection with the Teapot Dome lease, and I again repeat I have not done so."

PRICELESS EXPERIENCE OF LAST YEAR SHOULD BE KEPT IN MIND IN 1924

By L. V. Nicholas

President, National Petroleum Marketers' Association

May our industry have the courage and good judgment to face 1924 with both our eyes and our minds open.

In my opinion, during 1924 the refining and marketing division of the industry faces two great outstanding problems.

L. V. Nicholas

The first I believe will be a disappointing demand for gasoline in relation to the available supply and I sincerely hope and trust that with both our eyes and our minds open, we will not go through another year of belated readjustment, which is not only costly but entirely unnecessary.

Whatever can be said of 1923, it gave us a generous and priceless gift in the form of "experience" and the price paid for the gift justifies our keeping it constantly in mind during 1924.

Our second great problem, in my opinion, is going to be the great demand for distillates and gas oils for domestic heating, which I am afraid will result in a shortage, sellers' market and misunderstanding and criticism of our industry by the great consuming public, which is being sold oil heating equipment on the theory that to heat with oil is as cheap or cheaper than the use of coal.

This, in my opinion, is a glaring industrial error. Oil for domestic heating should not be sold on a price competitive basis any more than the telephone is sold in competition with shoe leather—any more than the modern bathroom is sold on a basis of its economy over waiting for the "spring thaw" and a dip in the lake.

In my opinion, we must develop in this industry a broad, light fuel oil cut that will be sold at a price to represent the cost of our crude, plus refining, overhead and a fair profit and the quicker we get onto that basis and avoid misunderstanding with the hundreds of thousands of home owners who are starting to heat with distillates sold to them below cost, the better it will be for all concerned.

At heart I am an optimist and I am glad to be able to say that, broadly, I believe 1924 will be a year of great constructive forward movement in the industry. I am glad to see prices advancing to normal and proper levels and I cannot but believe that our priceless gift of 1923's experience can be depended on to curb wild drilling and the attendant overproduction of crude, as I hope and believe it will also curb and discourage the needless and wanton duplication of equipment and investment in the jobbing and refining division of the industry.

Nineteen hundred and twenty-four finds us just having completed an extensive post-graduate course in "Mistakes to avoid in the oil industry," and is a year in which I expect to see overheads reduced, margins narrowed and real efficiency earn net dividends that will be entirely satisfactory to all intelligently invested capital in the oil industry.

Morgan Buys Marland Shares; Options More; Denial From Jersey

NEW YORK, Jan. 26.—E. W. Marland, president of Marland Oil Co., has announced that the company has sold to J. P. Morgan & Co. 300,000 shares of its stock, heretofore unissued, and has also for a substantial cash consideration, given an option to the same firm on an additional amount of the company's shares. The option is understood to be on 335,000 shares.

It is understood that the price on the 300,000 shares is $30 a share and on the 335,000 shares, under option, $40 a share.

The Standard Oil Co. of New Jersey has closed a new contract for purchase of crude oil and gasoline from Marland Oil Co. Rumors that the company has acquired or will acquire, directly or indirectly, stock interest in Marland Oil are officially denied.

Dull Week in Group 3 Refined Markets

Kerosene Prices Higher With Little Change in Other Products Except Gasolines, Which Are Soft. February Trend Uncertain

By C. O. Willson

Undisturbed by changes either in the posted price of crude oil or tank wagon advances in the fields and marketing territories in which it is particularly interested the past week was dull in Group 3 refined markets in comparison to other recent seven-day periods. Despite the dullness there were developments which were somewhat surprising to the trade.

The substantial price slump in gasoline which buyers a week ago predicted in the event crude or tank wagon changes did not occur in Oklahoma crude or the Standard Oil Co. of Indiana tank wagon is yet to materialize while other products were either firm or advancing. On the other hand it can be said that sellers were disappointed in the undeniable slight weakness in the gasoline situation despite all efforts to prevent it.

A comparison of quotations today with those of a week ago shows that kerosenes are ⅛ to ¼-cent higher. This price strength developed the latter part of last week and although inquiries and movement have fallen off somewhat since the first of the week, prices are unchanged. The situation in regard to fuel oils, distillates and neutrals has not materially changed.

The price decline in gasoline has not been large up to this writing with many of the refiners in fact denying that any change in the price situation has developed. In so far as a majority of the refiners is concerned this contention is true. They are quoting the same prices they were a week ago and although some conceded that the movement has fallen off, a majority state that they do not anticipate changing their prices until they advance them again. However, there is New Navy gasoline available in sufficient quantities to be a market factor under last week's prices and it is not all in the hands of marketers. The latter the past week still had some gasoline bought for January delivery but this material was not nearly so apparent as it was a week ago.

Wavering Market

A few refiners who have been accumulating gasoline for several weeks in anticipation of a further advance in price are responsible for the wavering gasoline market. Some of these plants are sending out the same quotations to the jobbing trade generally that they were a week ago, but due to the slow demand from that source, they have been compelled to shade their prices in shipments for resale or other large buyers. Unless the number of these plants materially increases the situation does not mean a substantial slump in price for the material offered can be absorbed by the trade without weakening the entire price structure.

However, there are certain buyers who are still confidently expecting a general weakness to develop before the end of the week providing, as previously stated, there is not a boost in Mid-Continent crudes or tank wagon markets. Some of these buyers are indicating their position in the situation by refusing to buy even when the gasoline is offered them from ¼ to ½-cent under the prevailing market. They state that they are unable to dispose of this gasoline to the jobbing trade even at the low price, although many refiners are making sales direct to the trade at from 11½ to 12 cents.

On the side of those who believe that the gasoline advance cannot be maintained is the fact that February, from the point of gasoline consumption, is the poorest month of the year. For that reason a heavy demand from the jobbers is not to be expected, meaning that refiners must offset this situation by limiting the amount offered through a reduction in crude runs or by storing the excess of gasoline over current requirements. Past experience leads to the conclusion that a reduction in refinery runs is improbable. In the past under similar conditions there has been agitation seeking to bring reduced refinery runs during the period of minimum gasoline consumption, but the results have never been encouraging. Ever since general conditions in the oil industry began to improve, considered as a whole, refinery runs in the Mid-Continent area have been increasing and the manner in which refiners are scrambling to get crude indicates this situation will continue.

As to storage the larger plants can be expected to continue to store through February and until the spring demand starts. The "if" in the situation still lies with the smaller concerns who have not the storage facilities or inclination to limit the amount of gasoline offered for current consumption until spring and summer when it is agreed that any present excess will be needed.

Crude Advance Expected

Regarding a crude advance in Oklahome crude and a tank wagon advance in Standard of Indiana territory, market observers are inclined to expect the former and at the same time fear that the latter will not materialize as soon as desired. There is nothing to indicate that the upward trend in Oklahoma crude and that of the Mid-Continent area generally has stopped. In fact, every known indication among large and small buyers, both within and without Group 3, points to further advances. These advances may not come as fast as some believe, but substantially higher prices are to be expected by late spring in the event no new sources of production are opened within the next few weeks large enough to bring about an increase in the world's crude supply.

Crude conditions in Group 3 point to an immediate price increase by the major purchasing companies. Both the large and small buyers are seeking new crude connections and the latter, as usual, are offering premium inducements. As was pointed out in these columns last week, the independent refining industry of Group 3 will suffer from substantial crude advances at this time because they cannot hope to advance their gasoline prices in line with the higher crude costs but at the same time many of these same refiners are themselves largely responsible for the tight crude market situation. Almost daily comes authentic information regarding added premiums offered for crude. One refiner in Group 3 is known to have lost three crude connections during the past week to other refiners who offered a premium varying in size up to 50 cents.

Offering Premiums

These producers cut loose from this refiner despite the fact that the company during the proration period of the summer months, had run 100 per cent of their oil at posted prices when other connections, regardless of price, could not be obtained. Several other refiners who are paying premiums during the past week have been told of offers of from 25 to 50 cents from competitive plants. It is also known that the large buyers are also aware of this competition and are losing crude connections because of it. It follows that this scramble for crude can have but one result and that is higher posted prices.

The chances of higher tank wagon price in the Middle West are not so favorable. As has been previously pointed out in these columns recently, leading market observers do not look for an advance by the Standard Oil Co. of Indiana until prices at the refineries justify it, regardless of the crude advance. The gate of wide margins between the refinery gasoline and tank wagon prices, in the light of the experiences of the past year, will probably not be left so open that the Governor McMasters of the country can drive in again. Present crude prices would not justify another 2-cent advance which will probably materialize if the present threatening weakness does not develop into lower prices.

Going outside Group 3 there were several developments during the past week which are encouraging. First among these developments were the tank wagon advances in the East and several other consuming areas. These advances now total from 1 to 2 cents in excess of the 4-cent advance in Standard of Indiana territory. These advances in the gasoline wholesale prices, following closely on the heels of the California crude change, have been followed by higher prices at the refineries. In Pennsylvania, where crude advances have totaled from $1.65 to $1.90, the refinery advance in gasoline during the past week was sensational. The importance of these changes so far as Group 3 is concerned, lies in the fact that refiners there will not be in a position to compete with the prices established by the Mid-Continent area.

Another encouraging development was the 1-cent advance in gasoline and naphtha export prices announced on Tuesday. Briefly summarized, despite the weakness apparent during the past week in some products, conditions pointing to an advancing market have not changed and sellers in a position to overlook the temporary price slumps still occupy a favorable position.

Gasolines and Naphtha

The general situation in regard to gasoline has been explained. Weather conditions in the Middle West have not been favorable to gasoline consumption for two weeks and from some States the demand has been far below the average for the first two weeks of the year. Even shipments on contracts have been held up at the request of the jobber whose storage in some cases is filled. This and the uncertain price situation brought about the slow movement of New Navy gasoline to the States of the Middle West. February opens with little business placed for delivery over the month.

There was little change in the movement of the other grades of gasoline. The movement of the higher gravities was confined to the domestic trade. Buyers of naphtha are still having difficulty getting their supplies at prices which will permit blending at a profit.

Natural Gasolines and Blends

Both natural gasolines and blends are easier to obtain than they were the previous week. Practically the same situation obtains as in the straight run market. The major natural gasoline manufacturers and blenders are not giving

(Continued on Page 174)

REFINED MARKET BAROMETER

Changes in the Eastern situation featured developments in refined markets for the entire United States during the past week. Following closely the California crude price change of last week, tank wagon gasoline advances—quickly reflected in prices at the refineries—occurred throughout the East and Southeast. The upward trend in refinery prices in Pennsylvania, where important crude advances also became effective were of a sensational nature. The Middle West and Mid-Continent lagged behind the Eastern market with no general advances on any products. Gasolines in fact showed a general tendency toward weakness applying to straight run, natural gasolines and blends. Scattered official reports indicate a seasonal falling off in gasoline consumption with large quantities being run to storage.

Mid-Continent—Prices generally unchanged in all products with the exception of Arkansas. Gasoline weakness due to expectation of lower prices of many buyers who are staying out of the market together with unfavorable weather which has reduced consumption. Reports from all areas point to a temporary price slump providing the demand does not improve gasoline or tank wagon advances do not occur. Little fuel or gas oil available with a scarcity in some areas resulting in prices as high as $1.50 being asked for immediate shipment. Kerosene stronger in Group 3, but unchanged in the remaining areas. Practically no change in distillates. Neutrals dull. Natural gasolines price lower where there were any changes.

Atlantic Seaboard—Market generally strong with important advances in both domestic and export prices. General tank wagon advances reflected in higher prices at the refineries with another 1-cent increase in export gasolines and naphthas. Lubs firm with indication of price advances in the near future. Temporary decline in shipments of Mexican oil has not affected fuel prices.

Pennsylvania—Another 50-cent advance in Pennsylvania crudes with higher tank wagon prices brought over night advance in prices at the refineries. Gasolines advanced from 2 to 3 cents despite slow movement due to stormy weather. Strong demand for practically all grades of neutrals and prices are generally higher. Fuel oil and kerosene prices higher where there were any changes.

Chicago—Stormy, cold weather resulted in offers of distress gasoline in sufficient quantities to lower the market. Naphtha scarce with good demand for blends from Northern States and Canada. Fuel oil prices higher. Lubricants stronger following advances in Mid-Continent area.

Gulf Coast—More buying resulted in better tone in zero cold test oils. A 15-cent advance in Gulf Coast crudes also served to firm the market. Higher prices for refined products expected later. Strong demand for fuel and gas oils.

KENTUCKY GASOLINE UP

Effective January 30 the Standard Oil Co. of Kentucky advanced gasoline tank wagon and service station prices 2 cents in entire territory. These changes are not included in the table found on the Tank Wagon page giving tank wagon and service station prices in the Southern area.

FORM SAFETY COUNCIL FOR MID-CONTINENT

DALLAS, Tex., Jan. 28. — Engineers representing nearly all of the large producing, refining and pipe line companies in the Mid-Continent Field perfected an organization to prevent or partially control the number of accidents occurring in the oil industry. The meeting was called to order by Harry H. Smith, secretary of the Mid-Continent Oil & Gas Association. D. J. Wallace, Houston, was chosen chairman, Jack O'Brien, Tulsa, secretary, and Harry H. Smith, Tulsa, treasurer, to serve until the first annual meeting in January, 1925.

Mr. Wallace, who is director of safety for the Humble Oil & Refining Co., also chairman of the Texas Safety Council, in accepting the chairmanship of the "Petroleum Safety Council of the Mid-Continent Oil & Gas Association," said four of the five states in the Mid-Continent Field — Texas, Oklahoma, Louisiana and Kansas — were represented as were companies with over 36,000 employes. Also more than 80 companies with over 12,000 employes in Oklahoma have promised to join. Texas companies with over 13,000 are enrolled in the Texas Safety Council, which was merged with the Mid-Continent Council.

Primarily the council's efforts will be based on the theory that the majority of accidents are preventable, and the new organization plans instructions to the workers so they will be able to protect themselves. Part of this protection will come from a change of machinery and rigs and part by a decrease of exposure.

Directors elected from the four states present included H. W. Boggess, of the Sinclair Refining Co., Tulsa, for Oklahoma; J. S. Gibson, of the Prairie Pipe Line Co., Independence, for Kansas; George Cook, of the Standard Oil Co., Baton Rouge, Louisiana; R. S. Haseltine, the Guiberson Corp., Dallas, Texas; and a director for Arkansas is yet to be appointed. The chairman for each state was authorized to select from his state five men in addition to himself who will have charge of the active work of the new organization.

It was voted to assess the companies becoming members 40 cents annually for each employe listed, 20 cents to be paid in the near future and the balance during the last six months at the call of the officers if the full amount is required.

H. C. Foster, of Bartlesville, Okla., assistant petroleum engineer of the United States Bureau of Mines, assured the organization the Bureau of Mines would lend every assistance to make the labor of the oil worker less hazardous.

DEATH OF JAMES CREMIN

James Cremin, drilling contractor and oil producer, of the firm of Cremin & Cremin, Tulsa, Okla., died Monday night after 36 hours illness of acute indigestion. Mr. Cremin was 50 years of age. He was born and reared in McKean County, Pennsylvania, and started in the oil business in his youth as a tool dresser. He worked in the Ohio fields, where he became a driller, and in 1901 went to the Kansas Field, moving to Oklahoma in 1904. Mr. Cremin drilled the first well completed in the Republic of Cuba in 1907. Since 1908 he had confined his operations to the Mid-Continent Field as a contractor and oil producer, in which he was successful financially. He is survived by his wife and one daughter and three brothers, T. O., E. F. and Frank Cremin. The funeral will be held today in Tulsa.

CONTINENTAL BOARD FOR MUTUAL MERGER

DENVER, Colo., Jan. 29.—The board of directors of the Continental Oil Co., one of the former Standard Oil units, has decided to recommend to the stockholders acceptance of a proposition from the Mutual Oil Co. for a merger on the basis of four shares of Mutual for one of Continental.

DEFENSE OF INDUSTRY PRAISED BY AMERICAN OIL MEN'S ASSOCIATION

To the Editor of The Oil and Gas Journal:

At our last directors' meeting, a resolution was passed extending a vote of thanks and complimenting The Oil and Gas Journal for the splendid work you are doing in circulating pamphlets defending the Oil Industry and giving such a thorough and masterful presentation of the real hazards in the business and the unfairness of the legislators and others in their unfounded criticisms.

Our directors went on record strongly supporting your policy and instructed me to assure you that the splendid editorial articles appearing in your columns are indeed appreciated by the officers of this organization.

Very truly yours,

AMERICAN OIL MEN'S ASSOCIATION

Chicago, Ill., Jan. 26. 1924. JOHN D. REYNOLDS, Secretary.

FOREIGN CORPORATIONS PAY ON GROSS ASSETS

AUSTIN, Tex., Jan. 30.—Authority of the State to collect franchise taxes upon the gross assets in Texas of a foreign corporation, rather than its net assets, was upheld by the Third Civil Appeals Court in affirming judgment of the Travis County District Court in the case of the American Refining Co., a Delaware corporation, against Secretary of State S. L. Staples. The company was denied an injunction to restrain cancellation of its permit to do business in Texas.

The company showed it owned property valued at nearly $3,000,000 and paid a fee of $2,500 which the Secretary of State held but refused to renew its permit until the balance, based on the company's gross assets was paid. The ruling will involve all foreign corporations owning property in Texas.

SIMPLER REFINING REPORTS

The Bureau of Mines is now mailing to each refinery in the country a new revised form on which the companies are to report their refinery statistics. The form which is being sent out this month is much simpler than the one formerly in use and is expected to do away with considerable clerical work heretofore necessary in the preparation of the reports.

NATURAL GASOLINE MANUFACTURERS EXPECT BETTER CONDITIONS IN 1924

By D. E. Buchanan

President Association of Natural Gasoline Manufacturers

From all indications, the natural gasoline manufacturer is on common ground with those in all other branches of the petroleum industry, so far as the outlook of 1924 is concerned.

Economists, the nation over, told us many months ago that the deflation which must necessarily follow the inflation incident to the World War, was not entirely completed in 1921. Early in the year 1923, they told us it would probably be completed during the 12 months to follow. If deflation means anything less than utter ruin, then I believe we can say the job has been well done.

If the period of deflation is governed in any respect by the law of supply and demand, surely we can hope for better conditions during this calendar year. It is estimated that consumption of crude oil will overtake production early next summer. If this prophecy proves true, the principal concern of the independent refiner for the year 1924, will be his supply of crude. If we experience the increase in gasoline consumption predicted for this year and the refiner is not able to procure all the crude he needs to operate his plant to capacity, we may be sure that he will cut as deeply into the crude as possible, in order to meet the heavy demands upon him and to reduce his operating costs to the minimum. This method of operation will make necessary the use of a larger percentage of natural gasoline per barrel of crude oil run through refineries. During the past four months many refiners have not been operating their pressure stills for the reason that there was less loss in selling kerosene, gas oil and fuel oil as such, than in cracking it into gasoline and selling the gasoline on the prevailing market and for the same reason, refiners have not been so much concerned with the extraction of every possible per cent of gasoline from the crude through rerunning, etc.

The demand for natural gasoline, even though the increase in production during the year 1923 was enormous, has been very satisfactory and while prevailing prices have for some months been below the cost of manufacture, there has, at practically all times, been sufficient demand to absorb the entire production. The low price structure for the last six months of 1923, was not the result of overproduction of natural gasoline, rather was the downward swing a sympathetic movement along with the price of Navy gasoline and crude oil, due to the over supply of both products. At no time during this period, was there any great amount of natural gasoline in storage. By reason of the fact that the majority of natural gasoline produced is used in the manufacture of New Navy and other motor fuels, it is quite natural that except in times of actual shortage, it should reflect, to a great extent, the condition of the Navy market. By this token, we feel safe in predicting a level of prices considerably higher than have prevailed for the past few months.

It has been a source of great pleasure to note the ever increasing number of users among refiners, as well as the larger jobbers, and even more satisfactory has been the noticeable increase in the quantity required by many large companies who have been steadfast users of the material for years.

Aside from the fact that the addition of the proper percentage of natural gasoline improves the quality of any motor fuel, it has the distinct advantage of enabling the refiner to increase materially his gasoline yield and this will be a worth while advantage during the months to come when high premiums for crude will no doubt prevail.

The natural gasoline industry recognizes the responsibility resting upon it in connection with the future motor fuel supply and is striving through individual and concerted effort to improve the quality of the product and at the same time, take care of the ever increasing demand.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended January 19 totaled 834,000 bbls., a daily average of 119,143 bbls. against 1,828,000 bbls., a daily average of 261,143 bbls. for the week ended January 12.

At Atlantic Coast Ports:	Wk. End. Jan. 19
Baltimore	110,000
New York	397,000
Philadelphia	108,000
Others	69,000
Total	684,000
Daily average	97,714
At Gulf Coast Ports:	
New Orleans and Baton Rouge	150,000
Daily average	21,429
Total Atlantic and Gulf Coast Ports	834,000
Daily average	119,143

According to figures collected by the American Petroleum Institute, imports of crude and refined oils at the principal ports for the week ended January 19 totaled 1,477,000 bbls., a daily average of 211,000 bbls., compared with 1,441,000 bbls., a daily average of 205,857 bbls., for the week ended January 12.

At Atlantic Coast Ports:	Wk. End. Jan. 19
Baltimore	78,000
New York	261,000
Others	258,000
Total	597,000
Daily average	85,286
At Gulf Coast Ports:	
Galveston district	403,000
New Orleans and Baton Rouge	305,000
Port Arthur and Sabine district	172,000
Total	880,000
Daily average	125,714
At All U. S. Ports:	
Total	1,477,000
Daily average	211,000

OIL INQUIRY COUNSEL NAMED

WASHINGTON, Jan. 30.—President Coolidge has announced the selection of Silas H. Strawn of Chicago, republican, and Thomas W. Gregory of Austin, Tex., attorney general in the Wilson administration, as special counsel to have charge of the Government's cases growing out of the naval oil inquiry. Strawn is a former president of the Illinois Bar Association.

OHIO CO. BUYS PRODUCTION

TOLEDO, Ohio, Jan. 28.—The Ohio Oil Co., of Findlay, has purchased the Indian Refining Co.'s producing properties, consisting of 846 wells, averaging 1½ bbls. each, located in Coles, Clark, Crawford and Lawrence counties, Illinois, and Gibson and Pike counties, Indiana.

S. DAKOTA JOBBERS ADVANCE GASOLINE DESPITE GOVERNOR

SIOUX FALLS, S. D., Jan. 29. —Independent oil jobbers today advanced the gasoline service station price from 15½ to 21½ cents. The 15½-cent price had been in effect for over a month due to the action of Governor McMaster, who, through the State warehouse department, established stations selling at that price. Jobbers said the advance was imperative because of the higher prices asked by refiners and the advancing crude market.

Fifty independent jobbers attending a convention of the South Dakota Independent Oil Jobbers Association at Mitchell today and tomorrow approved the action of the Sioux City jobbers. No criticism of Governor McMaster was made at the convention. The speakers who touched upon this topic declared "that all the independent dealers want is an honest living and do not desire to gain excess profits at others' expense."

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MEMBER AUDIT BUREAU OF CIRCULATION

THE REAL ISSUE

While the politicians are lashing each other to fury over the personal and political implications in the investigation of the leasing of the naval oil reserves in Wyoming and California we in the oil industry at least ought to keep the real issue in sight.

The primary and avowed purpose of the Senate inquiry was to determine whether the leasing of these naval oil reserves was to the best advantage of the Nation. The circumstances surrounding the awarding of those leases, however important, cannot alter or affect the ascertainable facts as to the conditions of the leases and their terms to the Government. So far, according to the expert testimony summoned by the Senate Committee, it has not been shown that the contracts were disadvantageous to the Government. That, after all, is the main question.

There has been difference of opinion as to policy in regard to these Naval oil reserves, whether the oil should be left in the ground or stored, but this is a professional and not a political controversy. The point to be kept in mind is that, with the storage policy adopted in preference to leaving the oil in the ground, subject, possibly, to drainage, the terms of the leases are not shown to be unfair to the Nation.

This is a fact that is likely to be lost sight of in the sensationalizing of the investigation for political purposes which is being used to besmirch the entire oil industry anew. There is an orderly process for determining the facts in their relative place and importance, but a congressional investigation does not seem capable of employing it. Unfortunately the public is thus misled into hasty and uninformed judgment before it has possession of all the evidence and without any sense of proportion between a judicial and a merely political verdict.

FOLLIES OF 1923

The oil industry is now sufficiently far out of the woods to stop running and look back at what scared it.

The experience of 1923 may not be without its value if a calm analysis gives the industry enough courage, knowledge and confidence next time to look before it starts running.

The total production of the United States last year is put at some 739,000,000 barrels. Our consumption increased over 20 per cent, to around 700,000,000 barrels a year today.

With California declining rapidly, Powell shrunken, and none of the flush fields of 1923 which gave us our overproduction capable of maintaining their output, the highest estimate of our production in 1924 is not over 700,000,000 barrels, our present consumption total. A conservative estimate puts it, indeed, at around 675,000,000 barrels and some calculations are lower than that.

What does this mean? It means that we have been switched overnight from a feast to a famine. It means that, to provide enough oil to offset depletion and to equal the production of 1923 we would need to find and develop no less than four fields, each capable of producing 100,000 barrels a day, or a total of 146,000,000 barrels a year.

* * * * * *

If we had not taken fright at the roar from California, if we had not thrown away, virtually, all that production we dumped at below cost last summer and fall, think where we would be today. The industry would be "sittin' pretty" indeed. There would have been no lost sleep, lost money or lost opportunities to lament.

The marvel is that there was not enough common counsel, cooperation and foresight to sense the situation in its long view and turn what seemed an avalanche of adversity into a rock of safety. Too many could not see the woods for the trees, could not tear their gaze from the ground to find guidance in the stars.

Yet surely there is no industry in which there is greater or more constant need for a broad outlook covering not merely one locality or one moment, but a survey of continents and years.

* * * * * *

Everyone in the oil industry knew that the passing of the peak of overproduction was only a matter of time, brief at that. Enough was known, almost to a certainty, to fix the date. Yet, despite that belief and knowledge men acted as though the floodgates were never to be closed, as though petroleum was to be henceforth and forever cheaper than water.

Credit must be given to those within the industry who kept their heads and strove steadily to stem the tide, refusing to be stampeded by "distress" products and unintelligent clamor stirred up by political demagogs. A sober, reflective review of the developments of the year will justify their stand, vain though it proved to be in the face of panicky psychology.

Had that attitude been supported by concerted action within the industry, based on facts that all oil men knew, the depression of 1923 should have been avoided and the blackest page in the annals of petroleum unwritten.

* * * * * *

The public, so often proclaimed the object of the politicians' tenderest care, may also find understanding, if not profit, in examining what has happened. Its brief joy ride on gasoline below cost is over and it is going to have to pay for it in increasing prices on a smaller production of oil, although, however high it may go, gasoline will continue to be the cheapest power within the reach of all.

The public, too, may have time to moralize on the disastrous effect of political interference with the business of supplying motor fuel to the country. Stampeding the oil industry and forcing sale of its products at bankrupt prices when every rule of reason and caution demanded that our supply of petroleum, which no one knows where or how to replace, should be conserved, is a spendthrift policy for both the industry and its consumers. It may procure the temporary election of some politicians to public office but it puts no cheap gasoline in the filling station permanently.

Nor should the lesson of 1923 be lost upon the industry itself. If, which seems so remote as to be impossible, there could be another year in which seven flush fields should be simultaneously discovered, flooding the world with oil as in 1923, it should be remembered that there is a 1924 for every 1923, a more probable famine for oil for every feast, and the industry should govern itself accordingly.

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Petroleum Securities Generally Strong

Market Tendency in Line With Recovery in the Oil Industry. Feeling Optimistic For 1924 and Even 1925

By N. O. Fanning
Room 525 No. 30 Church St., New York

NEW YORK, Jan. 28.—Oil securities were generally strong during the past week, Associated Oil, Maracaibo Oil Exploration, Marland Oil and Phillips Petroleum were particularly active and registered new high marks. The oil list as a whole, although firm, made little headway, aside from a few issues.

There was rather heavy selling of Sinclair Consolidated common in connection with the Teapot Dome investigation, and the Pan-American Petroleum and Transport issues were somewhat weak, although both showed strong support at lower levels.

Standard Oil stocks for the most part were well taken but registered only small advances, with the exception of certain high priced issues, such as Standard of Nebraska. Rumors of readjustment of capital accompanied the activity in this issue. It is said that reduction in the par value of the shares from $100 to $25 is contemplated, and that a stock dividend will be declared.

Stockholders of the Marland Oil Co. approved the issuance of 300,000 shares of additional stock for sale to J. P. Morgan & Co. Standard Oil Co. of New Jersey is negotiating for the purchase of crude oil from Marland over a five-year period. Marland stock advanced to 40, the new financing apparently being looked upon as a favorable development.

Standard Prominent

Now that oil stocks have shown a strong tendency in line with the recovery in the petroleum industry, rumors regarding mergers are being thrown about at random. As usual, the Standard Oil Co. of New Jersey figures in these reports as trying to gain control of numerous independent companies. The Dutch-Shell combine has apparently been forgotten as the possible buyer of independent oil companies. If it is not one, it is the other.

The only interest which might compel the Standard Oil Co. of New Jersey to buy control of Mid-Continent companies is the advisability of assuring itself sufficient production for its needs. With a decline in production in California in prospect, the company will doubtless have to extend its purchases of Mid-Continent crude. If it has to buy from other producers, it is often compelled to pay high prices, while if it had enough production of its own it would not be affected by prices so much. It is said the Standard Oil Co. of New Jersey is anxious to make itself independent of Prairie and other purchasing agencies so far as possible.

Feeling Optimistic

The general feeling in Wall Street regarding the outlook for the oil business is optimistic. The companies are starting the year with large supplies of crude oil on hand, but with the demand larger than ever. The continued decline in output makes it appear now that much of the surplus crude above a normal stock will be used up this year, and that unless new pools are opened up at the close of 1924, 1925 will also be a very good year for oil. In other words, unless unforeseen difficulties appear, the present improvement will be more than temporary.

Reports from the supply companies bear testimony to the improvement in oil. Prominent oil men who have ventured to speak are practically all optimistic.

Those oil companies that have accomplished new financing this year have found a ready response and willingness on the part of the bankers and investment public to back them up, which indicates increased confidence in the oil business.

Traces of the feeling of depression which was so current last year are still to be found, however. Many believe that the advance in oil securities from the low marks of last year has been so extensive as to more than reflect the improvement in the situation. It is interesting to note, in this connection, that the weekly index of oil stock prices compiled by The Oil and Gas Journal has recovered only about half the losses sustained during the early part of 1923. The average at 53.90 on January 22 was up 12.47 points from the low of 1923, and is 8.27 points below the high mark of that year of 62.17. During 1922 a high of 63.84 was registered (October 17). In connection with these comparisons it must be remembered that the oil industry is steadily increasing the volume of its business.

Price Governs Prosperity

With increased consumption practically assured, the oil business needs only reasonable prices to insure prosperity for this year. It has already enjoyed some advances, but prices are not yet considered on a level which could be called equitable, in the opinion of many oil men, and so still higher prices are looked for in the next month or two. Unless the decline in crude oil production from now on is sustained, there is not likely to be a runaway market for oil. This does not mean, however, that the oil business will not prosper. It simply signifies that prices will be held within reasonable limits by the law of supply and demand. This, in turn, holds out hope that the oil business will not be beset with political agitation—comparatively speaking, for the industry will probably never be entirely free from it. The foregoing sums up the situation as outlined by several oil men here.

Royal Dutch Up

An advance of approximately five points in Royal Dutch New York shares to above 55 calls attention to the prospects for the Dutch-Shell combine this year. Thanks to the large production of the Shell Union Oil Co. in the United States, the Dutch-Shell combine has experienced no shortage of raw material despite the falling off in its Mexican production. Shell Union's output in the fields of southern California amounted to approximately 75,000 barrels daily, and the combine, through subsidiaries, has large output in the Mid-Continent field as well. It has added to its refining capacity in the latter area and is said to have increased its operations considerably.

In the way of prospective output, the Royal Dutch-Shell is well intrenched largely because of its vast holdings in Venezuela, a country which is expected to be the center of foreign development this year. The combine has three large concessions, one of which has a certain production of at least 15,000 barrels of oil daily. Promising wells have also been brought in on the other two concessions, but not much development has been done yet.

The Dutch-Shell combine has also been increasing its output in the Dutch East Indies, and is carrying on extensive drilling operations in that territory.

New York Oil Co.

The annual report of the New York Oil Co. shows a net operating profit of $1,031,143.22, a reduction of liabilities of $740,026.01 and an increase in investment of $291,117.31. It is making headway in clearing away the indebtedness incurred in laying the Poison Spider to Casper gas line. It has holdings reported producing $558,000 of oil from the Salt Creek and other fields, but the main income, according to the report, is from its gas. It takes gas from the Poison Spider and Boone Dome fields and also purchases gas from the Farup Co. in the Poison Spider. The gross income from the gas business is reported over $785,000 yearly. Vice President Ernest Marquardt went to Alaska last summer and made an extensive survey of the oil possibilities there, and as a result the New York Oil Co. took over 5,120 acres, later leased to the Associated Oil Co. of California, to develop. The completion of the oil pipe line from the Poison Spider Field to Casper will provide an outlet in that field which has been shut in for several years.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stock—	Par	§Dividend Rate	Closing Quotations Jan. 29	Jan. 22	Range High	1923 Low
1.	Associated Oil	25	6	32	32¼	29¼	24½
2.	Atlantic Refining, common	100	4	136	133	160	98¾
3.	Barnsdall "A"	25	..	17¼	17⅛	35	9⅞
4.	Caddo Central Oil	..	..	3⅝	4	9⅛	1½
5.	California Petroleum, common	25	7	27¼	25⅝	29⅛	17⅛
6.	Cosden & Co., common	..	7	37	35½	62¼	22⅜
7.	General American Tank	..	†3	45	*45	71⅞	40
8.	General Asphalt	100	..	43¼	44	54	23
9.	Houston Oil	100	..	72⅝	70½	78	40⅜
10.	Independent Oil & Gas	10	..	8¼	8½	11¼	3⅜
11.	Indiahoma Refining	25	..	*2⅜	2⅞	9	1¼
12.	Indian Refining	10	..	5¼	5⅜	8⅛	4
13.	Invincible Oil	50	..	.15½	15½	19¼	7⅛
14.	Maracaibo	..	..	34⅝	32⅝	28¼	16
15.	Marland	..	..	38⅝	37	69⅝	18½
16.	Mexican Seaboard	..	..	18½	16⅝	19⅜	5⅜
17.	Middle States Oil	10	..	6	6⅛	12¼	3½
18.	National Supply	50	6	70⅞	66¼	68	54
19.	Pacific Oil	..	†2	5b	51⅜	52⅛	31½
20.	Pan-American, common	50	16	48	50⅜	93½	53
21.	Panhandle Prod. & Ref.	..	..	3½	3½	6¼	1¼
22.	Phillips Petroleum	..	†2	39⅞	34⅛	69⅝	19⅜
23.	Pierce Oil, common	25	..	3½	4¼	6	1½
24.	Producers & Refiners	50	..	39¼	41⅜	58¼	17⅛
25.	Pure Oil Co., common	25	6	24¼	24	32	16¼
26.	Royal Dutch, N. Y., sh	13.40	2.62	55	53¾	55⅛	40½
27.	Shell Transport	10	x92½	36½	35	41¼	29½
28.	Shell Union, common	..	†1	18⅜	17	19¼	12⅜
29.	Simms Pet.	10	..	12⅜	13	16⅜	6½
30.	Sinclair Consolidated, common	..	†2	22⅞	23¾	39⅝	16
31.	Skelly Oil	25	..	27⅜	24⅞	35	12⅛
32.	Standard of California	25	8	67½	64¾	64½	47½
33.	Standard Oil of N. J.	25	4	41¼	40¾	44¼	30⅞
34.	Standard of New Jersey, pfd	100	7	118½	118⅝	118¼	114¾
35.	Superior Oil	..	..	3⅝	3⅝	6¾	2
36.	The Texas Co.	25	12	44¾	43¾	52⅞	34⅝
37.	Texas & Pacific Coal & Oil	10	..	22	11⅞	24⅝	5½
38.	Tide Water Oil	100	4	141½	138¼	144	94
39.	Transcontinental	..	..	*5½	5⅝	14⅛	1¼
40.	Union Tank, preferred	100	7	107¾	107¾	114	106
41.	White Eagle Oil & Ref.	..	2¼	26⅞	26¾	30⅜	20⅛
	Standard Oil Stocks						
42.	Anglo-American Oil	£1	20	15⅝	15⅞	19¾	13½
43.	Borne Scrymser	100	12	155	*155	153	110
44.	Buckeye Pipe Line	50	14	82	79¾	94	69
45.	Chesebrough Mfg., com.	100	14	320	*270	340	205
46.	Continental Oil	25	8	53¼	49¾	50	32½
47.	Crescent Pipe Line	25	..	18¼	*17	25	15
48.	Cumberland Pipe Line	100	10	120	114	117	80
49.	Eureka Pipe Line	100	8	105	103	117¼	87
50.	Galena-Signal, common	100	4	68	68	78	55
51.	Humble Oil & Ref.	25	4.8	39½	38⅝	41	28¼
52.	Illinois Pipe Line	100	16	156	153	171	115
53.	Imperial Oil, Ltd.	25	16	116	117⅜	123	92
54.	Indiana Pipe Line	50	16	99	92	103	81
55.	Intl. Pet. Co.	..	x50	21½	20⅜	24¾	13¼
56.	Magnolia Pet.	100	4.5	151	152	166	123
57.	National Transit	12.50	16	25¼	24¾	29	19½
58.	New York Transit	100	10	*94	92	138	70
59.	Northern Pipe Line	100	25	105	98	111	96
60.	Ohio Oil Co.	25	4	76½	77⅛	85¾	48¾
61.	Penn-Mex Fuel	25	..	*36	38	45	10½
62.	Prairie Oil & Gas	100	8	225	261½	272	152
63.	Prairie Pipe Line	100	8	109½	108½	117	93
64.	Solar Refining Co.	100	15	220	*214	212	161
65.	Southern Pipe Line	100	16	99¼	*97	116	87
66.	South Penn Oil	100	..	165	169¾	196	100
67.	South West Pa. Line	100	8	86	*85	89	66
68.	Standard of Indiana	25	10	67⅞	66½	69⅞	49¼
69.	Standard of Kansas	25	8	49½	48	56¼	36½
70.	Standard of Kentucky	25	16	115½	116	109½	76
71.	Standard of Nebraska	100	20	237	245	280	186
72.	Standard Oil of N. Y.	25	5.6	47⅞	46½	49¾	35½
73.	Standard of Ohio, common	100	10	330	*322	320	270
74.	Swan & Finch	100	..	43	*36	38	21½
75.	Vacuum Oil	25	10	63⅞	59⅞	55½	40
76.	Washington Oil	10	..	*25	*25	28	20¼
	Miscellaneous Stocks						
77.	Cities Service, banker's shares	..	‡21	15⅞	*15	18½	12¾
78.	Gulf Oil Corp. of Pa.	25	6	63½	60½	68¼	45¾

*Bid, no sales. †In dollars. §6 per cent in cash and 15 per cent stock dividend declared; now being paid in scrip. ‡The figures carried in this column are kept up-to-date as far as possible but are not guaranteed. xCents per share.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange weekly was as follows:

Jan. 29	55.40	Dec. 24	52.28	Nov. 20	45.26
Jan. 22	53.90	Dec. 18	51.20	Nov. 13	43.84
Jan. 15	53.70	Dec. 11	49.27	Nov. 5	42.60
Jan. 8	52.68	Dec. 4	48.66	Oct. 30	41 66
Dec. 30	53.77	Nov. 27	47.74	Oct. 23	42.42

MORE DEMAND FOR SUPPLIE

NEW YORK, Jan. 26. — James Woods, president of the Bridgeport Machine Co., manufacturers of oil well drilling and fishing tools, said the change in the oil situation had brought substantial increases during the last few weeks in oil well machinery and that the outlook for 1924 had improved very much since the recent advances in crude and refined oil prices.

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OIL CITY, PENNSYLVANIA

District Offices: **New York Philadelphia Pittsburgh Cleveland Denver Tulsa Houston**

California Refined Petroleum Statistics for the Year 1923

Compiled by C. E. Steidel

There were 41 refineries reported to the United States Bureau of Mines, as operating in California on December 31, 1923, with an aggregate daily indicated capacity of 561,470 barrels of crude oil. At the close of the year these plants were operating at 71.5 per cent of their capacity based on the crude oil run to stills.

Gasoline—The production of gasoline in December was 103,872,185 gallons, a daily average of 3,350,716 gallons. Stocks on hand December 31, were 191,780,375 gallons, which is an increase of approximately 17,000,000 gallons over the stocks on hand November 30. Output of gasoline for the year 1923 amounted to 1,283,200,165 gallons, an increase of 589,702,417 gallons over 1922 output. Stocks on hand December 31 constituted 68 days' supply at the December rate of consumption.

Kerosene—Kerosene production during December was 23,991,576 gallons, an increase of 6,049,986 gallons over November production. Stocks were increased 6,249,359 gallons. Output of kerosene in 1923 amounted to 216,140,319 gallons, an increase of 20,848,290 gallons over 1922 output.

Gas and Fuel Oils—December production of gas and fuel oils was 351,224,962, a decrease of 28,361,996 gallons under November production. Stocks on December 31 were 653,182,981, an increase of 53,680,017 gallons over stocks on hand November 30. Production of gas and fuels during 1923 aggregated 4,099,279,051 gallons, an increase of 1,067,423,341 gallons over output in 1922.

Lubricants—Lubricants produced during December amounted to 9,586,252 gallons, an increase of 1,607,792 gallons over output in November. Stocks increased 2,576,866 gallons; 1923 production of lubricants amounted to 96,845,612, an increase of 15,197,086 gallons produced last year.

PRODUCTION, STOCKS AND CONSUMPTION OF GASOLINE IN CALIFORNIA DURING 1923

	Production	*Exports	Stocks End of Period	Indicated Consumption
January	92,686,090	2,278,689	116,433,560	73,340,241
February	92,852,538	15,381,091	120,680,550	73,224,457
March	104,402,122	2,589,854	138,058,780	84,434,038
April	102,428,548	11,807,764	136,684,477	91,995,087
May	112,314,674	14,998,714	147,125,960	86,874,477
June	115,316,719	15,767,821	142,859,892	103,814,966
July	121,212,438	10,781,163	136,585,654	116,705,513
August	109,165,919	4,789,902	153,605,104	87,356,567
September	103,618,605	13,037,029	144,099,126	100,087,554
October	119,134,600	†.....	158,441,451	104,792,275
November	106,195,727	†.....	174,452,019	90,185,159
December	103,872,185	†.....	191,780,375	86,543,829
Total	1,283,200,165	91,432,027	191,780,375	1,090,354,163

PRODUCTION, STOCKS AND CONSUMPTION OF KEROSENE IN CALIFORNIA DURING 1923

	Production	*Exports	Stocks End of Period	Indicated Consump.
January	15,759,990	9,664,250	18,369,629	15,344,078
February	17,712,987	11,220,035	20,183,814	4,678,767
March	18,405,327	16,698,112	18,061,458	3,829,571
April	18,359,965	9,709,238	23,042,443	3,669,742
May	20,519,907	12,682,963	22,939,105	7,940,283
June	17,998,276	6,072,528	20,918,844	13,946,011
July	16,285,670	2,945,771	27,436,485	6,822,258
August	16,399,772	9,977,107	23,275,804	10,583,346
September	17,296,559	4,112,854	27,703,822	8,755,687
October	15,468,701	†.....	24,867,076	18,305,447
November	17,941,599	†.....	23,978,044	18,830,622
December	23,991,576	†.....	30,227,403	17,742,217
Total	216,140,319	83,082,855	30,227,403	130,448,028

*From Bureau of Foreign and Domestic Commerce. †Figures not available.

PRODUCTION, STOCKS AND CONSUMPTION OF GAS AND FUEL OIL IN CALIFORNIA DURING 1923

	Production	*Exports	Stocks End of Period	Indicated Consumption
January	322,140,534	51,058,077	348,857,986	249,896,963
February	289,161,475	48,249,290	354,956,096	234,814,075
March	306,025,002	47,052,760	376,179,841	237,718,497
April	313,844,377	30,893,950	412,656,625	246,473,643
May	326,211,813	47,636,368	405,933,960	285,298,110
June	327,342,898	62,065,726	434,793,452	236,417,680
July	379,802,939	54,032,246	474,237,821	286,326,324
August	323,676,544	66,696,033	489,170,434	242,047,898
September	366,343,456	27,083,024	511,220,421	307,210,445
October	413,918,093	†.....	575,571,755	349,566,759
November	379,586,958	†.....	599,502,964	355,655,749
December	351,224,962	†.....	653,182,981	297,544,945
Total	4,099,279,051	444,797,474	653,182,981	3,328,971,088

*From Bureau of Foreign and Domestic Commerce. †Figures not available.

PRODUCTION, STOCKS AND CONSUMPTION OF LUBRICANTS IN CALIFORNIA DURING 1923

	Production	*Exports	Stocks end of Period	Indicated Consumption
January	5,896,244	2,478,194	12,937,207	4,621,280
February	5,386,572	642,745	11,558,537	6,122,497
March	8,612,721	1,158,620	10,030,274	8,982,364
April	8,370,970	1,151,177	12,037,010	5,213,057
May	10,327,104	2,971,980	11,670,568	7,721,566
June	9,170,543	4,304,155	12,475,393	4,061,563
July	7,488,351	509,296	12,293,950	7,160,498
August	7,072,812	1,427,109	13,186,679	4,752,974
September	8,674,579	330,666	12,409,350	9,121,242
October	8,281,004	†.....	12,716,142	7,974,212
November	7,978,460	†.....	12,417,259	8,277,343
December	9,586,252	†.....	14,994,125	7,009,386
Total	96,845,612	14,973,942	14,994,125	81,017,982

*From Bureau of Foreign and Domestic Commerce. †Figures not available.

MONTHLY RUNS TO STILLS AND OUTPUT OF REFINERIES IN CALIFORNIA DURING 1923

Oils run to stills, bbls.:	Crude Oil	Casinghead Gasoline	Total Oils Run
January	11,343,276	53,403	11,396,679
February	10,369,247	48,372	10,417,619
March	11,455,488	63,981	11,519,469
April	11,623,767	56,902	11,680,669
May	11,990,121	71,946	12,062,067
June	12,048,433	81,241	12,129,674
July	13,960,661	87,110	14,047,771
August	13,505,221	90,828	13,596,049
September	13,382,560	84,485	13,467,045
October	14,748,709	85,921	14,834,630
November	13,323,272	99,712	13,422,984
December	12,455,225	96,563	12,551,788
Total, 1923	150,205,980	920,464	151,126,444
Daily average, 1923	411,523	2,522	414,045

Output and Losses	Gasoline (gal.)	Kerosene (gal.)	Gas and Fuel (gal.)	Lubricants (gal.)	Wax (lbs.)
January	92,686,090	15,759,990	322,140,534	5,896,244	7,600
February	92,852,538	17,712,987	289,161,475	5,386,572	.....
March	104,402,122	18,405,327	306,025,002	8,612,721	.....
April	102,428,548	18,359,965	313,844,377	8,370,970	40,162
May	112,314,674	20,519,907	326,211,813	10,327,104	.....
June	115,316,719	17,998,275	327,342,898	9,170,543	.....
July	121,212,438	16,285,670	379,802,939	7,488,351	.....
August	109,165,919	16,399,772	323,676,544	7,072,812	192,720
September	103,618,605	17,296,559	366,343,456	8,674,579	.....
October	119,134,600	15,468,701	413,918,093	8,281,004	.....
November	106,195,727	17,941,599	379,586,958	7,978,460	27,500
December	103,872,185	23,991,576	351,224,962	9,586,252	.....
Total, 1923	1,283,200,165	216,140,319	4,099,279,051	96,845,612	179,467
Daily average, 1923	3,515,617	592,165	11,230,901	265,330	491

	Asphalt (tons)	Other Fin. Prod. (gal.)	Net Partly Ref. (gal.)	Losses (gal.)
January	19,109	3,309,486	28,034,317	6,275,656
February	18,583	3,116,062	19,174,225	5,801,186
March	26,758	3,995,223	29,166,608	6,966,679
April	28,566	4,613,822	28,854,787	7,446,369
May	32,420	6,181,128	14,852,620	8,636,721
June	41,957	5,306,671	16,149,669	8,373,360
July	44,439	6,004,362	40,320,004	8,536,062
August	46,595	5,546,705	89,079,684	9,222,112
September	43,561	5,485,939	45,166,595	8,843,161
October	44,186	5,591,284	41,250,730	9,107,582
November	38,842	4,883,604	30,340,352	7,773,635
December	30,246	5,338,049	18,243,353	7,663,944
Total, 1923	415,262	59,372,344	400,632,945	94,342,909
Daily average, 1923	1,138	162,664	1,097,624	260,118

MONTHLY STOCKS AT REFINERIES IN CALIFORNIA DURING 1923

Crude Oil, etc., bbls.:	Crude Oil	Domestic Partly Ref.	Total Oils to be run
January 31	3,285,462	4,463,842	7,749,304
February 28	3,177,701	5,960,805	9,138,506
March 31	3,366,082	6,285,722	9,651,804
April 30	2,944,182	7,032,123	9,976,305
May 31	3,112,941	7,437,689	10,550,630
June 30	2,843,912	8,559,205	11,403,117
July 31	2,833,018	9,657,798	12,490,816
August 31	3,799,500	10,307,579	14,107,079
September 30	6,409,185	10,888,211	17,297,396
October 31	6,647,300	11,405,536	18,052,836
November 30	6,197,630	11,825,292	18,022,922
December 31	5,543,158	12,453,927	17,997,085

Finished Products:	Gasoline (gal.)	Kerosene (gal.)	Gas and Fuel (gal.)	Lubricants (gal.)
January 31	116,433,560	18,369,629	348,857,986	12,937,207
February 28	120,680,550	20,183,814	354,956,096	11,558,537
March 31	138,058,780	18,061,458	376,179,841	10,030,274
April 30	136,684,477	23,042,443	412,656,625	12,037,010
May 31	147,125,960	22,939,105	405,933,960	11,670,568
June 30	142,859,892	20,918,844	434,793,452	12,475,393
July 31	136,585,654	27,436,485	474,237,821	12,293,950
August 31	153,605,104	23,275,804	489,170,434	13,186,679
September 30	144,099,126	27,703,822	511,220,421	12,409,350
October 31	158,441,451	24,867,076	575,571,755	12,716,142
November 30	174,452,019	23,978,044	599,502,964	12,417,259
December 31	191,780,375	30,227,403	653,182,981	14,994,125

	Wax (lbs.)	Asphalt (tons)	Other Fin. Prod. (gal.)
January 31	183,535	11,200	614,530
February 28	50,900	12,362	626,892
March 31	47,838	11,367	453,347
April 30	234,534	16,746	482,861
May 31	189,321	16,347	449,783
June 30	189,321	17,307	424,775
July 31	176,952	15,242	327,458
August 31	166,424	11,785	346,681
September 30	252,081	16,441	230,433
October 31	198,581	13,197	291,197
November 30	196,323	13,674	266,341
December 31	136,188	12,555	269,630

PRODUCTION OF TOPS IN CALIFORNIA—(Gallons)

	1920	1921	1922	1923
January	5,443,459	8,626,743	15,171,967	31,218,440
February	4,482,532	8,988,185	13,522,694	31,111,101
March	6,709,191	8,758,690	14,381,140	31,464,363
April	5,755,295	8,415,876	22,579,263	35,294,715
May	5,890,813	8,240,239	20,053,286	39,212,466
June	5,519,092	9,236,823	23,095,001	44,027,466
July	6,254,824	8,998,328	23,937,160	48,837,866
August	7,506,666	5,350,062	25,775,443	45,473,203
September	6,482,339	7,517,183	26,217,898	49,794,000
October	7,530,081	15,386,320	29,717,363	45,650,927
November	7,066,341	14,272,223	28,468,444	38,233,673
December	8,976,818	14,063,951	38,012,163	35,113,747
Total	77,617,451	120,854,623	280,951,802	439,964,000

STOCKS OF TOPS HELD AT CALIFORNIA REFINERIES—(Gallons)

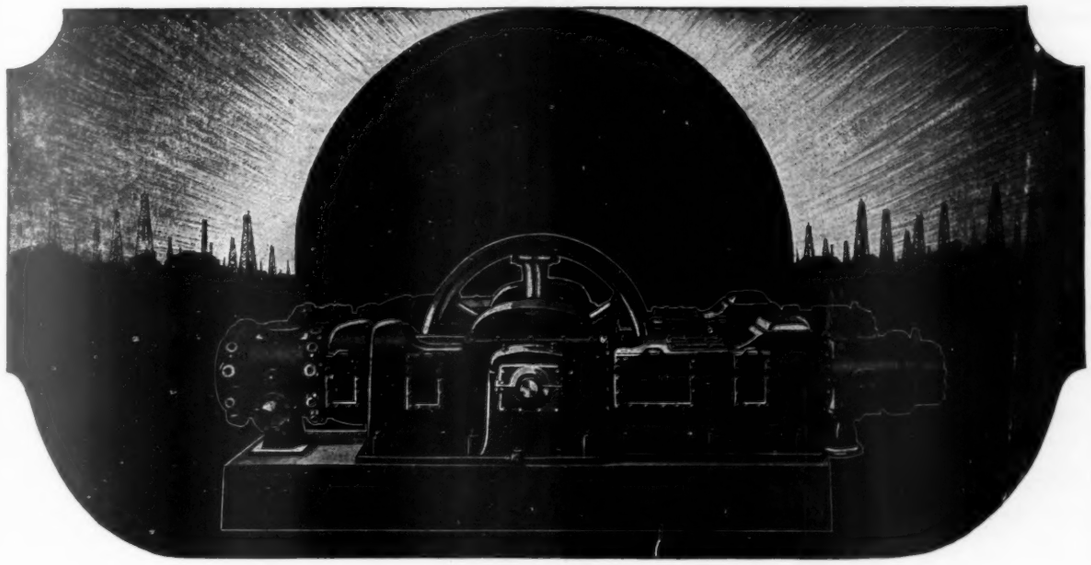
	1920	1921	1922	1923
January 31	5,127,422	14,512,303	79,855,999	98,196,545
February 28	4,390,169	7,283,379	84,765,051	104,902,195
March 31	6,301,109	12,468,061	77,793,485	112,137,698
April 30	6,463,486	14,406,293	86,257,034	113,655,773
May 31	7,559,463	8,949,266	90,530,968	111,312,660
June 30	9,439,792	7,917,660	87,141,731	106,061,166
July 31	3,191,721	6,330,318	80,862,161	104,561,001
August 31	4,573,934	8,093,527	64,305,025	104,562,866
September 30	3,969,591	5,765,880	57,800,345	97,652,299
October 31	11,547,028	9,419,548	48,980,948	93,656,553
November 30	10,616,691	6,027,472	49,531,011	94,483,450
December 31	14,295,447	6,048,591	49,243,080	101,949,001

PRODUCTION OF GAS AND FUEL OILS IN CALIFORNIA, 1918-1923—(Gallons)

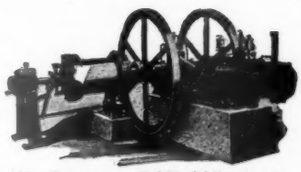
	1918	1919	1920	1921	1922	1923
January	182,346,186	181,376,893	175,912,789	214,377,407	218,688,777	322,140,534
February	168,277,324	172,617,525	156,373,010	198,669,233	205,740,621	289,161,475
March	176,787,012	186,259,783	182,431,250	211,951,870	236,550,587	306,025,002
April	178,315,270	196,924,120	171,732,122	223,660,219	233,165,559	313,844,377
May	178,057,822	202,766,329	173,355,797	202,900,448	253,210,833	326,211,813
June	186,707,307	175,000,509	172,641,586	225,399,296	249,827,717	327,342,898
July	190,488,351	191,530,959	188,931,386	227,885,917	250,359,422	379,802,939
August	190,327,287	207,643,496	203,308,318	212,953,107	266,607,889	323,676,544
September	179,330,913	213,662,792	193,364,630	215,122,225	265,798,759	366,343,456
October	168,697,775	197,120,229	189,287,108	193,654,803	277,488,680	413,918,093
November	165,519,497	185,072,962	191,704,631	198,970,236	262,994,016	379,586,958
December	168,929,412	190,564,104	206,912,924	207,272,224	311,422,856	351,224,962
Total	2,133,784,156	2,300,539,701	2,205,955,551	2,532,816,985	3,031,855,710	4,099,279,051

STOCKS OF GAS AND FUEL OILS HELD AT REFINERIES IN CALIFORNIA, 1918-1923—(Gallons)

	1918	1919	1920	1921	1922	1923
January 31	116,756,229	167,787,096	217,754,072	118,945,203	185,965,596	348,857,986
February 28	100,547,111	177,800,872	219,057,709	147,044,158	195,495,415	354,956,096
March 31	93,316,201	186,692,936	221,093,126	172,591,414	197,881,339	376,179,841
April 30	82,952,157	227,564,740	235,168,629	181,540,370	242,049,307	412,656,625
May 31	98,574,436	188,452,676	218,771,926	208,974,728	259,132,501	405,933,960
June 30	106,887,032	200,867,174	216,803,020	220,851,742	272,132,189	434,793,452
July 31	122,429,917	190,993,372	198,448,519	231,273,955	274,297,252	474,237,821
August 31	128,455,538	215,926,092	187,511,491	235,784,248	276,751,833	489,170,434
September 30	130,156,082	228,264,901	174,234,123	227,520,998	273,085,191	511,220,421
October 31	136,140,198	220,970,830	147,176,574	218,428,620	272,538,588	575,571,755
November 30	134,062,387	220,046,225	138,670,963	224,682,579	290,720,456	599,502,964
December 31	172,946,579	216,358,499	96,395,968	211,132,951	306,105,554	653,182,981



Type Ten Bessemer Direct Gas Engine Driven Compressor



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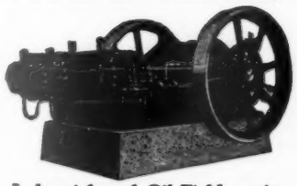

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BESSEMER OIL FIELD ENGINES – COMPRESSORS VACUUM PUMPS – ROLLER PUMPING POWERS

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

CHICAGO DIST. (Based on Group 3)—	Jan. 29		Jan. 22		Jan. 15	
50-52 450 end point (Naphtha)	.10½	.11	.10½	.10¾	.10½	.10¾
56-58 450 end point	.10¾	.11	.10½	.10¾	.11	.11¼
58-60 437 end point (New Navy)	.11	.11½	.11¼	.11½	.11½	.12
60-62 400 end point	.12½	.12¾	.12½	.12¾	.12½	.13
64-66 375 end point	.13½	.13¾	.13¼	.13½	.13¾	.13¾
68-70 360 end point	.14¼	.14½	.14	.14½	.14	.14½
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.10¾	.11	.10¾	.11	.10½	.11
56-58 450 end point	.11	.11¼	.11¼	.11½	.11¼	.11½
58-60 437 end point (New Navy)	.11¼	.11¾	.11½	.11¾	.11½	.11¾
60-62 400 end point	.12¼	.12½	.12½	.12¾	.12½	.12¾
64-66 375 end point	.13¼	.13¾	.13½	.14	.13½	.13¾
68-70 350-365 end point	.14	.14¼	.14¼	.14½	.14	.14½
KANSAS—						
58-60 437 end point (New Navy)	.11½	.11¾	.11¾	.12	.11¾	.12
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.10½	.10¾	.10¾	.11	.10¼	.10¾
50-52 440 end point (Naphtha)	.10¾	.11	.11	.11¼	.10½	.11
56-58 450 end point	.11	.11¼	.11¼	.11½	.11	.11¼
58-60 437 end point (New Navy)	.11¼	.11¾	.11¾	.12	.11½	.12
60-62 400 end point	.12¼	.12¾	.12¾	.13	.12½	.12¾
64-66 390 end point	.13	.13¼	.13½	.13¾	.13¼	.13¾
64-66 375 end point	.13¼	.13¾	.13¾	.14	.13½	.14
NORTH LOUISIANA—						
56-58 450 end point	.11	.11¼	.11	.11¼	.10¾	.11
58-60 437 end point (New Navy)	.11½	.11¾	.11½	.11¾	.11¼	.11¾
60-62 400 end point	.12½	.12¾	.12¾	.13	.12	.12¼
64-66 375 end point	.13¾	.14	.14	.14½	.13	.13¼
64-66 390 end point	.13¼	.13½	.13¾	.14	.12½	.13
ARKANSAS—						
58-60 450 end point	.11¼	.11½	.11¼	.11½	.11½	.11¾
58-60 437 end point (New Navy)	.11½	.11¾	.11½	.11¾	.11¾	.12
64-66 375 end point	.13½	.14	.13½	.14	.13½	.14
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (New Navy)	.12½		.12½		.12½	
PENNSYLVANIA—						
52 Naphtha	.13¾		.11		.11	
54 Naphtha	.13⅞		.11		.11	
56 Gasoline	.14		.11½		.11½	
58 Gasoline	.14½		.12½		.12½	
60 Gasoline	.15		.13¼		.13	
62 Gasoline	.16		.14		.13½	
64 Gasoline	.17		.15		.14½	
66 Gasoline	.18¼		.16½		.15½	
68-70 Gasoline	.18¾		.17½		.16½	

*Colorado points.

NATURAL GASOLINE

CHICAGO DIST. (Based on Group 3)—	Jan. 29		Jan. 22		Jan. 15	
Grade A, 72-78, under 375 e.p., rec. 90%	.10½	.11	.10½	.11	.10½	.11
Grade B, 76-82, 375 end point, rec. 85%	.10	.10½	.10¼	.10¾	.09¾	.10¼
Grade C, 80-88, 350 end point, rec. 78%	.09	.09¼	.09	.09¼	.08¾	.09
OKLAHOMA (Group 3)—						
Grade A, 72-78, under 375 e.p., rec. 90%	.10½	.11	.10½	.11¼	.11	.11½
Grade B, 76-82, 375 end point, rec. 85%	.09¾	.10¼	.09¾	.10¼	.10	.10½
Grade C, 80-88, 350 end point, rec. 78%	.09	.09¼	.08¾	.09¼	.09	.09½
Grade D 88-92 350 end point	.08¾	.09¼	.08¾	.09¼	.09	.09½
NORTH TEXAS—						
Grade A, 72-78, under 375 e.p., rec. 90%	.10¼	.10¾	.10½	.11	.10¾	.11¼
Grade B, 76-82, 375 end point, rec. 85%	.09½	.10	.09¾	.10¼	.10	.10½
Grade C 80-88 350 end point, rec. 78%	.08½	.08¾	.08¾	.09	.08¾	.09¼
NORTH LOUISIANA—						
Grade B	.10	.10½	.10	.10½	.09¾	.10
Grade C	.09	.09¼	.09	.09¼	.08¾	.09¼

MOTOR NATURAL GASOLINE (BLEND)

CHICAGO DIST. (Based on Group 3)—	Jan. 29		Jan. 22		Jan. 15	
58-62 437 end point	.10½	.10¾	.10¼	.10¾	.10½	.11
60-62 450 end point	.10½	.10¾	.10¼	.10¾	.10½	.11
64-66 450 end point	.10½	.10¾	.10½	.11	.10½	.11
OKLAHOMA (Group 3)—						
60-62 450 end point	.10½	.11	.11	.11¼	.11	.11½
64-66 437 end point	.10½	.11	.11	.11¼	.11	.11½
68-70 430-435 end point	.10½	.11	.11	.11¼	.11	.11½
NORTH TEXAS—						
58-62 440 end point	.10¾	.11	.11	.11¼	.10¾	.11¼
58-60 450 end point	.10¾	.11	.11	.11¼	.10¾	.11¼
PENNSYLVANIA—						
*60-62	.14½		.13		.12	
*64-66	.14½		.13		.12	
*66-68	.14½		.13		.12	
*68-70	.14½		.13		.12	

*At Sistersville, W. Va.

BURNING OIL

CHICAGO DIST. (Based on Group 3)—	Jan. 29		Jan. 22		Jan. 15	
41-43 water white Kerosene	.05¾	.06	.05¼	.05½	.05¼	.05½
42-44 water white Kerosene	.06	.06¼	.05½	.05¾	.05½	.05¾
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.05¾	.06	.05½	.05¾	.05½	.05¾
42-43 water white Kerosene	.05¾	.06¼	.05¾	.06	.05¾	.06
41-43 prime white Kerosene	.05¼	.05½	.05	.05¼	.05	.05¼
KANSAS—						
41-43 water white Kerosene	.05¾	.06¼	.05¾	.06¼	.05¾	.06
NORTH TEXAS—						
41-43 water white Kerosene	.05¾	.06	.05¾	.06	.05½	.05¾
41-43 prime white Kerosene	.05¼	.05½	.05¼	.05½	.05	.05¼
40-42 prime white Kerosene	.05¼	.05½	.05¼	.05½	.04¾	.05¼
42-44 water white Kerosene	.06	.06¼	.06	.06¼	.05½	.06
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05½	.05¾	.05½	.05¾	.05½	.05¾
42-44 water white Kerosene	.05¾	.06¼	.05¾	.06	.05¾	.06
ARKANSAS—						
41-43 water white Kerosene	.05¾	.06	.05¾	.06	.05½	.05¾
42-44 water white Kerosene	.06	.06¼	.06	.06¼	.05¾	.06
ROCKY MOUNTAIN STATES—						
*40-42 water white Kerosene	.08		.08			
PENNSYLVANIA—						
43 Kerosene prime white	.07¾		.07		.07	
45 Kerosene water white	.07⅞		.07¾		.07¾	
46 Kerosene water white	.08¾		.08¼		.08	
47 Kerosene water white	.09¼		.08¾		.08½	
36 Miners' Neutral	.08¾		.08¼		.07¾	

*Colorado points.

FUEL OILS

CHICAGO DIST. (Based on Group 3)—	Jan. 29		Jan. 22		Jan. 15	
24-26 Fuel Oil (sellers' cars, Group 3)	1.10	1.20	1.05	1.10	1.05	1.15
22-24 (El Dorado)	1.00	1.05	.90	.95	.90	.95
18-20 (Smackover)	.95	1.00	.85	.90	.80	.85
32-36 Gas Oil	.03¼	.03½	.03⅛	.03⅜	.03	.03⅛
38-40 Straw distillate	.04¼	.04½	.04	.04¼	.03¾	.04¼
KANSAS—						
24-26 Fuel Oil	1.20	1.30	1.25	1.30	1.15	1.20
32-36 Gas Oil	.03½	.03¾	.03½	.03¾	.03¼	.03⅜
38-40 Distillate	.04	.04½	.04	.04½	.04¼	.04½
OKLAHOMA (Group 3)—						
24-26 Fuel Oil (buyers' cars)	1.10	1.15	1.10	1.15	1.05	1.10
24-26 Fuel Oil (sellers' cars)	1.15	1.20	1.15	1.20	1.10	1.15
28-30 Fuel Oil (sellers' cars)	1.25	1.30	1.25	1.30	1.20	1.25
32-36 Gas Oil	.03⅜	.03⅝	.03¼	.03½	.03⅛	.03¼
38-40 Straw distillate	.04	.04¼	.04	.04¼	.04	.04¼
NORTH TEXAS—						
24-26 Fuel Oil	1.20	1.25	1.20	1.25	1.05	1.10
26-30 Fuel Oil	1.25	1.30	1.30	1.35	1.10	1.15
32-36 Gas Oil	.03½	.03⅝	.03⅜	.03⅝	.03	.03⅛
36-38 Gas Oil	.03⅝	.03⅞	.03½	.03¾	.03⅛	.03¼
38-40 Straw distillate	.04	.04¼	.04	.04¼	.04	.04¼
NORTH LOUISIANA—						
20-22 Fuel Oil	1.10	1.15	1.10	1.15	1.10	1.15
32-36 Gas Oil	.03¼	.03½	.03¼	.03½	.03	.03⅛
38-40 light Straw distillate	.04	.04¼	.03¾	.04	.03⅛	.03⅜
ARKANSAS—						
38-40 Distillate	.04	.04¼	.04	.04¼	.03¾	.04
32-36 Gas Oil	.03¾	.04	.03¾	.04	.03⅛	.03⅜
22-26 Refinery Fuel Oil	1.05	1.10	1.05	1.10	1.00	1.10
GULF COAST (South Texas)—						
Gas Oil	.04¼	.05	.04½	.05	.04⅛	.05
Fuel Oil	1.60	1.75	1.60	1.75	1.40	1.50
PENNSYLVANIA—						
30-34 Fuel Oil	.05¼		.05¼		.05¼	
36-40 Fuel Oil	.06		.05½		.05½	
34 Neutral	.09¾		.09½		.06¼	

NEUTRAL OILS

OKLAHOMA (Group 3)—	Jan. 29		Jan. 22		Jan. 15	
Pale Neutrals:						
70-80 vis., 2½ color, 20-25 cold test	.04¼	.04½	.04½	.04¾	.04¼	.04½
100 vis., 2 color, 20-25 cold test	.06	.06½	.06	.06½	.05½	.06
100 vis., 3 color, 20-25 cold test	.05½	.06	.05½	.06	.05	.05½
150 vis., 3 color, 20-25 cold test	.11½	.12	.11½	.12	.10	.10½
150 vis., 4 color, 20-25 cold test	.11	.11½	.11	.11½	.09½	.10
180 vis., 4 color, 23-28 cold test	.13¼	.13¾	.13¼	.13¾	.12	.12½
180 vis., 3 color, 23-28 cold test	.13	.13½	.13	.13½	.12¼	.12½
200 vis., 3 color, 23-28 cold test	.15	.15½	.15	.15½	.13¼	.14
200 vis., 4 color, 23-28 cold test	.14¼	.14¾	.14¼	.14¾	.13	.13½
200 vis., 3 color, 25-30 cold test	.15	.15½	.15	.15½	.14¾	.15
220 vis., 4 color, 25-30 cold test	.15¼	.15¾	.15¼	.15¾	.14	.14½
240 vis., 3 color, 25-30 cold test	.17	.17½	.17	.17½	.15¾	.16
240 vis., 4 color, 25-30 cold test	.16¼	.16¾	.16¼	.16¾	.15	.15½
280 vis., 3 color, 25-30 cold test	.19	.20	.19	.20	.18½	.19
280 vis., 4 color, 25-30 cold test	.18½	.19	.18½	.19	.17½	.18
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.11½	.12	.11½	.12	.11	.11½
180 vis., 6 color, 23-28 cold test	.10¾	.11¼	.10¾	.11¼	.10¼	.10¾
200 vis., 5 color, 23-28 cold test	.12½	.13	.12½	.13	.12¼	.12¾
200 vis., 6 color, 23-28 cold test	.11¾	.12¼	.11¾	.12¼	.11½	.11¾
220 vis., 5 color, 25-30 cold test	.13½	.14	.13½	.14	.13	.13½
220 vis., 6 color, 25-30 cold test	.12¾	.13¼	.12¾	.13¼	.12½	.13
240 vis., 5 color, 25-30 cold test	.14½	.15	.14½	.15	.14¼	.14¾
240 vis., 6 color, 25-30 cold test	.13¾	.14¼	.13¾	.14¼	.13½	.13¾
280 vis., 5 color, 25-30 cold test	.17½	.18	.17½	.18	.16½	.17
280 vis., 6 color, 25-30 cold test					.15½	.16
150-160 vis., 1 color, 40-50 cold test	.06½	.07	.06½	.07	.06¼	.06½
190-200 dark green, 40-50 cold test	.05¼	.05¾	.05¼	.05¾	.05	.05½
600 steam refined	.16	.16½	.16	.16½	.16	.16½
590-600 Bright Stock	.27	.28	.27	.28	.26	.27
600-610 Bright Stock	.31	.33	.31	.33	.31	.32
Waxes:						
124-126 White Crude Scale Wax	.03¾	.04	.03¾	.04	.03½	.03¾

REFINERY AND CROSS PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

PENNSYLVANIA—

	Jan. 29	Jan. 22	Jan. 15
150, 3 color	.28½	.27	.26
180, 3 color	.31¼	.29	.26
200, 3 color	.32¾	.31	.30
220, 3 color	.35	.34	.33
600, steam refined	.19½	.18¼	.17¼
635, steam refined	.21½	.20	.19
650, steam refined	.23½	.22	.21½
600, Pennsylvania flash	.27	.26¼	.26
630, Pennsylvania flash	.30½	.27½	.27
*350, E filtered	.21	.20	.19½
*600, E filtered	.24¼	.22½	.22½
600, E filtered	.22½	.21	.21½
600, D filtered	.29	.27	.26
550, E filtered	.20	.20	.20
550, D filtered	.22	.22	.22
Pennsylvania Bright Stock	.38	.34½	.34½
†122-124 White Crude Scale Wax	.04¼	.04	.04
*122-124 White Crude Scale Wax	.04¾	.04⅛	.04⅛
300 Mineral Seal	.09	.07½	.07½

*At Warren, Penn. †At New York City.

GULF COAST (South Texas)—

Lubricating Stocks:						
Zero Black	.07½	.08	.07½	.08	.07½	.08
No. 2 color, 100 vis., pale oil	.09½	.11	.09½	.11	.09½	.11
No. 2 color, 150 vis., pale oil	.11	.12	.11	.12	.11	.12
No. 3 color, 200 vis., pale oil	.13	.14	.13	.14	.12½	.13½
No. 3½ color, 300 vis., pale oil	.15½	.16½	.15	.16	.15	.16
No. 3½ color, 500 vis., pale oil	.17½	.18½	.17	.18	.16½	.17½
No. 3½ color, 750 vis., pale oil	.23	.24	.22	.23	.22	.23½
No. 1½ color, 150 vis., filtered	.21	.23	.21	.23	.21	.23
No. 2 color, 200 vis., pale, filtered	.23	.25	.23	.25	.23	.25
No. 3 color, 300 vis., pale, filtered	.28	.29	.28	.29	.28	.29
No. 3½ color, 500 vis., pale, filtered	.32	.33	.32	.33	.32	.33
No. 3½ color, 750 vis., filtered	.38	.40	.38	.40	.38	.40
No. 5 to 6 color, 200 vis., red oil	.11	.12	.11	.12	.11	.12
No. 5 to 6 color, 300 vis., red oil	.13½	.14½	.13	.14	.12½	.13½
No. 5 to 6 color, 500 vis., red oil	.15½	.16½	.15	.16	.14½	.15½
No. 5 to 6 color, 750 vis., red oil	.21	.22	.21½	.23	.21½	.23
No. 5 to 6 color, 1200 vis., red oil	.24½	.26				

NEW YORK DOMESTIC MARKET

Motor Gasoline:	Jan. 29	Jan. 22	Jan. 15
Greater New York, in steel barrels	.20	.17½	.15½
New York State outside Greater New York and New England, tank wagon	.20	.17½	.15½
New Jersey, tank wagon	.19½	.17½	.15½
Gasoline in bulk, delivered at N. Y.	.12	.12	.10
V. M. P. Naphtha, in steel barrels	.19	.16½	.14½
Kerosene:			
Greater New York, tank wagon	.15	.15	.15
New York State (outside Greater New York and New England, tank wagon	.15	.15	.15
New Jersey tank wagon	.14	.14	.14
Lubricating Oil (Industrial) at refinery:			
Bayonne, N. J.:			
Cylinder, extra light filtered, in barrels	.37½	.37½	.37½
Cylinder, light filtered, in barrels	.32½	.32½	.32½
Cylinder, Bright Stock	.44	.44	.44
Cylinder, steam refined (600)	.22½	.22½	.22½
Black, in bulk	.09½	.09½	.09½
Bloomless, white, 30-31 gravity, 170 vis.	.43	.43	.43
Bloomless, 885 specific gravity	.10½	.10½	.10½
Red Paraffin:			
170 viscosity	.18	.18	.18
212 viscosity	.20	.20	.20
265 viscosity	.22	.22	.22
295 viscosity	.25	.25	.25
Paraffin, 903 specific gravity	.22½	.22½	.22½
*Fuel Oil:			
Bunker Oil, 14 plus, delivered in barges, bbl.	1.45	1.45	1.35
Diesel Oil, at refinery, gallon	.03¾	.03¾	.03½
Furnace Oil, tank wagon, gallon	.10	.10	.10
Gas Oil, delivered in New York	.04¼	.04¼	.04
Wax, fully refined:			
120-122 a.m.p.	.04	.04	.04
125-127 a.m.p.	.04¼	.04¼	.04¼
130-132 a.m.p.	.04¾	.04¾	.04¾
135-137 a.m.p.	.05⅜	.05⅜	.05⅜

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

	Jan. 29	Jan. 22	Jan. 15
Motor Gasoline, in cases, gallon	.27.4	.26.4	.25.4
Motor Gasoline, U. S. Navy, spec. gallon	.13.5	.12.5	.11.5
Naphtha, 60° F., 59-61 spec. grav.	.15.0	.14.0	.14.0
Naphtha, 60° F., 63-66 spec. grav.	.17.0	.16.0	.15.0
Naphtha, 60° F., 66-68 spec. grav.	.18.5	.17.5	.16.5
Kerosene:			
Standard white, in bulk, gallon	.07	.07	.07
Standard white, in barrels, gallon	.14	.14	.14
Standard white, in cases, gallon	.17.15	.17.15	.17.15
Water white, in cases, gallon	.08	.08	.08
Water white, in barrels, gallon	.15	.15	.15
Water white, in cases, gallon	.18.5	.18.5	.18.5

CRUDE OIL PRICES

January 21.—Standard Oil Co. of Louisiana advanced north Louisiana and Arkansas crudes 15 cents. Atlantic Oil Producing Co. advanced Stephens County, Arkansas, crude 15 cents. Ohio Oil Co. advanced Elk Basin, Grass Creek light and Lance Creek crudes 15 cents, Rock Creek crude 20 cents and Big Muddy 25 cents. Midwest Refining Co. advanced Salt Creek 20 cents. Osage and Cat Creek crudes were advanced 15 cents. Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo, and Wooster crudes 10 cents. Imperial Oil, Ltd., advanced Canadian crudes 10 cents.

January 22.—Standard Oil Co. of California advanced all grades of California crudes 25 cents.

January 25.—Humble Oil & Refining Co. advanced Gulf Coast crudes 15 cents. Other companies met this advance on the same day or the day following. Seep Purchasing Agency advanced all grades of Pennsylvania crude, Somerset light and medium crudes 25 cents, Corning and Cabell crudes 15 cents and Ragland crude 10 cents. Indian Refining Co. advanced Western Kentucky light and heavy crudes 25 cents. Paragon Development Co. advanced Warren, Simpson, Cumberland and Monroe Counties (Ky.) crudes 25 cents.

January 30.—Joseph Seep Purchasing Agency advanced all grades of Pennsylvania crude 25 cents, Somerset crudes, medium and light, 15 cents.

Arkansas and North Louisiana

Caddo, 38° and above	$1.50
35° to 37.9°	1.40
32° to 34.9°	1.30
Below 32°	1.15
Homer, 35° and above	1.50
33° to 34.9°	1.40
31° to 32.9°	1.30
Below 31°	1.15
Haynesville, 33° and above	1.40
Below 33°	1.30
El Dorado, 33° and above	1.50
Below 33°	1.40
Bull Bayou, 38° and above	1.45
35° to 37.9°	1.30
32° to 34.9°	1.15
De Soto	1.50
Crichton	1.30
Bellevue	1.30
Smackover, 26° and above	1.15
25° to 25.9°	1.00
24° to 24.9°	.90
Below 24°	.80
Stephens, Ark.:	
Below 23°	.80
23° to 25.9°	1.00
26° to 27.9°	1.15
28° to 31°	1.20

*Posted by Atlantic Oil Producing Co.

Wyoming and Montana

Rock Creek (Wyo.)	$1.30
Salt Creek	1.20
Big Muddy	1.10
Mule Creek	.70
Grass Creek (light)	1.55
Elk Basin	1.55
Lance Creek	1.50
Osage	1.50
Cat Creek (Mont.)	1.55
Sunburst (Mont.)	.70
Greybull and Torchlight	1.40
Hamilton Dome	.92½

Lander and Lost Soldier based on contracts covering entire production of fields.

Oklahoma, Kansas, North and Central Texas

Corsicana Light	$1.60
Corsicana Heavy	.75
Mexia	1.60
Currie	1.75
Powell	1.60
Thrall	1.00

Prairie Oil & Gas Co., and other major purchasing companies except as noted below:

Below 33°	$1.15
33° to 35.9°	1.40
36° to 38.9°	1.60
39° and above	1.75

Magnolia Petroleum Co.:

Below 28°	.75
28° to 30.9°	1.00
31° to 32.9°	1.15
33° and above, same as Prairie:	

Gulf Coast

Gulf Pipe Line Co., Goose Creek, Hull, Sour Lake, Batson, Saratoga, Spindletop, Orange, Vinton, Edgerly, Jennings	$1.65
Grade "B," Pierce Junction, Blue Ridge	1.40
The Sun Pipe Line Co., Grade "A," Humble, Hull, Goose Creek, Orange, Spindletop, Saratoga, Batson, Dayton, Sour Lake	1.65
Grades "B," Blue Ridge, Pierce Junction	1.40
Humble Pipe Line Co., Goose Creek, Hull, West Columbia, Orange	1.65
Grade "B," Pierce Junction	1.40
Texas Pipe Line Co., Humble, West Columbia, Orange, Sour Lake, Saratoga, Batson, Vinton, Jennings, Markham	1.65
Sinclair Pipe Line Co., West Columbia, Damon Mound	1.65
Luling and Laredo	.75
Milam County	1.35

California

14° to 19.9°	$ .85
20° to 20.9°	.86
21° to 21.9°	.87
22° to 22.9°	.88
23° to 23.9°	.89
24° to 24.9°	.90
25° to 25.9°	.91
26° to 26.9°	.92
27° to 27.9°	.93
28° to 28.9°	.94
29° to 29.9°	.95
30° to 30.9°	.96
31° to 31.9°	.97
32° to 32.9°	.98
33° to 33.9°	.99
34° to 34.9°	1.00
35° gravity and above	1.01

Eastern States

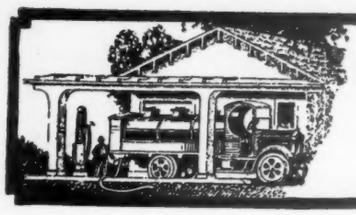
Penna Grade Oil in New York Transit Lines	$4.50
Bradford District Oil in National Transit Lines	4.50
Penna Grade Oil in National Transit Lines	4.00
Penna Grade Oil in Southwest Pa. Pipe Line Lines	4.00
Penna Grade Oil in Eureka Pipe Line Lines	4.00
Penna Grade Oil in Buckeye Pipe Line Lines	4.00
Cabell Grade Oil in Eureka Pipe Line Lines	2.05
Corning Grade Oil in Buckeye Pipe Line Lines	1.80
Somerset Medium Oil in Cumberland Pipe Line Lines	2.15
Somerset Light Oil in Cumberland Pipe Line Lines	2.35
Ragland Grade Oil in Cumberland Pipe Line Lines	1.00
Lima	1.93
Wooster	1.80
Illinois	1.72
Indiana	1.73
Princeton	1.72
Plymouth	1.10
Waterloo	1.20
†Petrolia, Canada	2 33
†Oil Springs, Canada	2.40
Western Kentucky (light), (Indian Refining Co.)	2.06
Western Kentucky (heavy), (Indian Refining Co.)	1.86
Warren & Simpson Counties (Ky.) (Paragon Development Co.)	2.00
Cumberland and Monroe Counties (Ky.), (Paragon Dev. Co.)	2.20

†Plus Government bounty of 52½c.

Mexican Crude

*Tuxpam (f. o. b. Mexican ports)	$ .80
†Panuco (f. o. b. Mexican ports)	.65
Tuxpam (New York)	1.31
Panuco (New York)	1.06

*Plus 26.69c tax. †Plus 15.58c tax. Prices based on contracts.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, Jan. 29

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
Chicago district	16.0	..	18.0	11.0

Tank wagon prices on April 10, 1922, g. up 1½c; May 3, g. up 1c; June 27, both up 1c; July 19, g. down 2c; k. down 1c; Oct. 10, g. down 2c; Oct. 31, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 29, g. up 2c; Jan. 12, 1924, g. up 2c; k. up 1c.

Decatur, Ill.	16.2	..	18.2	11.5
East St. Louis	15.1	..	17.35	10.6
Joliet	16.4	..	18.4	11.7
Peoria	16.2	..	18.2	11.5
Quincy	16.2	..	18.2	11.3
Davenport, Ia.	16.5	..	18.5	11.9
Des Moines	16.5	..	18.5	11.9
Keokuk	16.5	..	18.5	11.9
Sioux City	16..	..	18.1	11.5
Duluth, Minn.	17.2	..	19.2	12.6
Minneapolis	16.9	..	18.9	12.6
La Crosse, Wis.	17.2	..	19.2	12.4
Milwaukee	16.1	..	18.1	11.3
Madison	16.3	..	18.3	11.5
Detroit, Mich.	16.8	..	18.8	12 2
Grand Rapids	16.7	..	18.7	12.1
Saginaw	16.9	..	18.9	12.3
Evansville, Ind.	18.0	2.0	20.0	11.5
Fort Wayne	18.4	2.0	20.4	11.9
Indianapolis	18 2	2.0	20.2	11.7
South Bend	18.4	2.0	20.4	11.9
Fargo, N. D.	18.6	1.0	20.6	14.6
Huron, S. D.	20.0	2.0	22.0	13.1
Sioux Falls	15.5	2 0	15.5	12.6
*Kansas City	16.9	1.0	18.9	10.3
Springfield	15.8	..	17.8	11.2
*St. Louis	15.6	.5	17.9	11.0
*St. Joseph	16.3	.5	18.3	11.2
Wichita, Kans.	15.8	..	17.8	10.8
Bartlesville, Okla.	20.0	1.0	22.0	14.5

*City tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
*Pittsburgh, Pa.	19.0	..	24.0	14.0
*Philadelphia	19.0	..	24.0	14.0
*Scranton	19.0	..	24 0	14.0
*Allentown	19.0	..	24.0	14.0
*Altoona	19.0	..	24.0	14:0
Dover, Del.	21.0	2.0	24.0	14.0
Wilmington	21.0	2.0	24.0	14.0
Providence, R. I	17.5	..	20.0	14.0
Springfield, Mass	17.5	..	20.0	14.0
Worcester	17.5	..	20.0	14.0
Boston	17.5	..	20.0	14.0
Hartford, Conn.	18 5	1.0	21.0	14.0
New Haven	18.5	1.0	21.0	14.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
Denver, Colo.	19.0	2.0	21.0	14.5
Glenwood Spgs.	23.0	2 0	....	18.5
Pueblo	19.0	2.0	....	14.5
Billings, Mont.	21.5	2.0	23.5	16.5
Butte	23.0	2.0	25.0	17.0
Great Falls	23.0	2.0	25.0	18.0
Helena	23.0	2.0	25.0	18.0
Miles City	22.5	2.0	24.5	17.5
Boise, Idaho	20.0	2.0	22.0	20.0
Salt Lake, Utah	21.0	2.5	23.0	17.5
Ogden	21.0	2.5	23.0	17.5
Basin, Wyo.	20.0	1.0	....	15.0
Casper	18.0	1.0	20.0	13.0
Cheyenne	19.5	1.0	21.5	15 0
Cody	21.0	1.0	....	16.0
Lander	20.0	1.0	....	15.0
Albuquerque, N. M.	22.0	1.0	24.0	16.5

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
Atlanta, Ga.	18.0	3.0	22.0	14.0
Augusta	22.0	3 0	24.0	14.5
Macon	22.0	3.0	24.0	16.5
Savannah	20.0	3.0	22.0	14.0
Birmingham, Ala.	20.0	2.0	23.0	16.5
Mobile	20.0	2.0	21 0	13.5
Montgomery	20.0	2.0	22.0	16.0
Clarksdale, Miss	18.0	1.0	20.0	14.0
Jackson	18.0	1.0	20.0	12.0
Natchez	17.5	1.0	19.5	13 5
Vicksburg	17.5	1.0	19.5	13.5
Jacksonville, Fla	20.0	3.0	22.0	14.0
Miami	22.0	3.0	24.0	15.5
Pensacola	20.0	3.0	22 0	14.5
Tampa	20.0	3.0	22.0	14.0
Covington, Ky.	20.0	1.0	22.0	13.0
Lexington	19.0	1.0	21.0	14.0
Louisville	18.0	1.0	20.0	13.0

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
Newark, N. J.	19.5	..	....	14.0
Atlantic City	19.5	..	....	14.0
Annapolis, Md.	21.0	2.0	22.0	14.0
Baltimore	21.0	2.0	22.0	13.0
Cumberland	21.0	2.0	24.0	15.0
Washington, D. C.	19.0	..	23.0	13.5
Norfolk, Va.	22.0	3.0	24.0	13.0
Petersburg	22.0	3.0	24.0	14.5
Danville	22.0	3.0	24 0	15.5
Richmond	22.0	3.0	24.0	13.5
Roanoke	22.0	3.0	24.0	15.0
Keyser, W. Va.	21.0	2.0	....	15.0
Charleston	21.0	2.0	....	13.5
Parkersburg	21.0	2.0	....	12.0
Wheeling	21.0	2.0	....	13.5
Charlotte, N. C.	22.0	3.0	....	14.5
Hickory	22.0	3.0	....	15.0
Mt. Airy	22.0	3.0	....	14.5
Salisbury	22.0	3.0	....	15.0
Charleston, S. C.	22.0	3.0	....	12.5
Columbia	22.0	3.0	24.0	14.5

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
New Orleans, La	17.5	1.0	19.5	9 0
Alexandria	18.5	1.0	21.5	13.0
Baton Rouge	17.0	1.0	20.0	11.5
Lake Charles	18.5	1.0	21.5	13.0
Shreveport	18.5	1.0	21 5	13.0
Memphis, Tenn.	20.0	2.0	22.0	14.0
Chattanooga	20.5	2.0	22.5	14.5
Knoxville	21.5	2.0	23.5	15.0
Nashville	19.5	2.0	20.5	13 5
Bristol	22.0	2.0	24.0	15.5
Little Rock, Ark	21.0	2.0	23.0	13.0
West Helena	21.0	2.0	23.0	13.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
Albany, N. Y.	20.0	..	23 0	14.0
*New York	20.0	..	22.5	15.0
Buffalo	18.5	..	21.5	15.0
Rochester	19.5	..	21.5	13.0
Syracuse	19.5	..	21.5	15.0
Boston, Mass.	19.0	..	21.5	15.0
Providence, R. I	20.0	..	23.5	15.0
Augusta, Me.	20.0	1.0	23.5	15.0
Manchester	20.0	1.0	23.5	15.0
Burlington, Vt.	20.0	1.0	23.5	15.0

*Price in steel barrels.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
Omaha	16.25	..	18.25	11.5
Crawford	17.0	..	....	12.25
McCook	17.75	..	19.75	13.0
Norfolk	16.75	..	18.75	12.0
North Platte	17.75	..	19.75	12 75
Scotts Bluff	17.25	..	19.25	12.25

PACIFIC COAST DISTRICT

Standard Oil Co. California)

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
San Francisco	15.0	2.0	18.0	15 5
Los Angeles	14.0	2.0	17.0	15.5
Fresno	15.5	2.0	18.5	17.5
Reno, Nev.	18.5	2.0	21.5	19.0
Portland, Ore.	17 0	3.0	20.0	16.5
Seattle, Wash.	16.0	3.0	17.0	16.5
Tacoma	16.0	2.0	19.0	16.5
Spokane	20.0	2.0	23.0	20.5
Phoenix, Ariz.	21.0	3.0	24.0	21.5
Honolulu, H.	14 5	..	17.5	17.5
Juneau, Alaska	15.5	..	18.5	15.0

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
Dallas, Tex.	17.0	1.0	20 0	10.0
Fort Worth	17.0	1.0	20.0	11.0
Houston	17.0	1.0	21.0	12.0
San Antonio	15.0	1.0	18.0	10.0
El Paso	17.0	1.0	20 0	13.0
Muskogee, Okla.	17.0	1.0	20.0	12.0
Oklahoma City	16.0	1.0	20.0	12.0
Tulsa	17.0	1.0	20.0	10.0
Ft. Smith, Ark.	22.0	4.0	25.0	13.0
Little Rock	22.0	4.0	25.0	13.0
Texarkana	19.0	4.0	22.0	12.0

OHIO

Standard Oil Co. (Ohio)

	Gasoline: Tank wagon	Gasoline: Incids tax of	Gasoline: Service station	Kero. Tank wagon
All Ohio points	18.5	..	20.5	14.5

FINISHED OILS FOR EUROPE

HOUSTON, Tex., Jan. 28.—The tanker Erivan will dock at Manchester on the Houston ship channel the first week in February to lift a cargo of lubricating oils from the plant of the Deepwater Oil Refineries. The cargo will consist of about 25,000 barrels of finished oils for delivery to continental Europe.

BUYS COMPRESSION PLANT

The Barco Gasoline Co. of Tulsa last week purchased the 8-unit compression gasoline plant of the Jake Hamon estate, located near Wirt, Carter County, Okla. The consideration covering tank cars and other equipment in addition to the plant proper, was approximately $50,000. The plant has a capacity of approximately 4,000 gallons daily.

TANK WAGON CHANGES

(Changes not previously reported)

January 21—Atlantic Refining Co. advanced gasoline tank wagon and service station prices 1 cent in Massachusetts.

January 24—Continental Oil Co. advanced gasoline tank wagon and service station prices 1 cent in Colorado and Wyoming.

January 25—Continental Oil Co., advanced gasoline tank wagon and service station price 1 cent at Albuquerque, N. M.

January 26—Continental Oil Co. advanced gasoline tank wagon and service station prices 1 cent in Utah and Idaho.

January 28—Continental Oil Co. advanced kerosene tank wagon 1 cent in entire territory with exception of New Mexico where no change was made. Atlantic Refining Co. advanced gasoline tank wagon and service station prices 2 cents in Pennsylvania and Delaware. Standard Oil Co. of Louisiana advanced gasoline tank wagon and service station prices 2 cents in entire territory. Standard Oil Co. of New Jersey advanced gasoline tank wagon 2 cents in Maryland, New Jersey, District of Columbia and 1 cent in Virginia and West Virginia.

January 29—Magnolia Petroleum Co. advanced gasoline tank wagon and service station prices 2 cents in Arkansas and Texas.

January 29—Standard Oil Co. of New York advanced gasoline tank wagon and service station prices 2½ cents in entire territory.

TO MARKET ENTIRE OUTPUT

The Altitude Petroleum Co. of Tulsa, Okla., and Chicago, Ill., has been appointed exclusive distributors of the entire output of the Nyanza Refining Co. of Wilson, Okla. The Altitude Petroleum Co. during the past year has been a large distributor of refined products from Mid-Continent refineries. The Nyanza Refining Co. operates a skimming plant located at Wilson, Okla., and its output consists of straight run refined oils and zero cold tests fuel oils.

PREMIUM ON POSTED PRICE

The Champlin Refining Co. has contracted with the Pennok Oil Co. for approximately 1,600 barrels daily of Tonkawa, Okla. production. The contract, it is understood, calls for a 50-cent premium over the posted price of the major purchasing companies. The oil is around 41 degrees gravity and for that reason commands 50 cents above the highest posted price for Oklahoma crude.

MID-CONTINENT REFINERY OPERATIONS JANUARY 19

With one additional refinery reporting, making a total of 135, the weekly statistical bulletin of the Western Petroleum Refiners' Association for the week ending January 19, shows an excess of gasoline, kerosene, gas and fuel oil production over consumption. As a result the stocks of all three products in the Mid-Continent area increased during the week. The increase in gasoline stocks totaled approximately 1,500,000 gallons, kerosene 150,000 gallons and gas and fuel oil 5,000,000 gallons. It will be noted by comparison with reports for other weeks that in the case of fuel and gas oils and gasoline present stocks are greatly in excess of the December and November totals although accurate data are not available because the reports for the several weeks do not cover the same number of refineries.

Reports from identical refineries for the two weeks ending January 19 shows an increase in oils consumed by stills and in the production of gasoline and kerosene while production of gas and fuel oil declined nearly 12 per cent. Shipments of gasoline, exclusive of Louisiana and Arkansas, decreased over 5 per cent. Kerosene and gas and fuel oil shipments for the five States combined also decreased.

CONSOLIDATED STATEMENT COVERING ALL REPORTING REFINERIES FOR WEEK ENDING 7 A. M., JANUARY 19, 1924

	Kansas	Oklahoma	Texas	Louisiana-Arkansas	Total	Week End. Jan. 12	Week End. Dec. 22	Week End. Nov. 24
Number refineries reporting	24	58	41	12	135	134	131	128
Daily capacity of stills, bbls.	83,900	260,700	131,700	46,200	522,500	521,750	497,850	486,650
Materials for stills, bbls.:								
Crude Oil, Item A	248,090	876,921	574,386	115,923	1,815,320	1,765,153	1,677,437	1,706,615
Other oils (see note) Item B	17,209	127,883	153,464	16,471	315,027	303,106	276,147	493,296
Total	265,299	1,004,804	727,850	132,394	2,130,347	2,068,259	1,953,584	2,192,911
Output of finished products, gals.:								
Gasoline, Item C	3,842,179	13,630,694	5,345,915	981,108	23,799,896	23,129,093	24,363,941	22,788,402
Kerosene, Item D	1,328,566	3,691,241	2,257,362	317,669	7,594,838	6,710,179	7,614,924	8,106,275
Gas and Fuel Oil, Item E	4,806,693	15,728,845	12,176,241	2,717,410	35,429,189	40,124,532	37,640,121	32,902,736
Stocks on hand at close of week:								
Materials for stills, bbls.:								
Crude Oil, Item J	562,207	4,186,252	1,007,566	1,110,257	6,866,282	6,784,834	7,033,473	6,736,686
Other oils (see note) Item K	24,842	1,005,353	434,142	549,729	2,014,066	2,272,413	1,688,370	1,730,253
Finished products, gals.:								
Gasoline, Item L	6,212,981	64,893,414	40,979,606	7,849,871	119,935,872	117,254,476	104,340,118	101,062,221
Kerosene, Item M	1,002,197	7,010,759	10,244,530	500,463	18,757,949	18,605,969	18,434,027	19,467,566
Gas and Fuel Oil, Item N	4,308,750	47,839,953	56,514,986	11,371,181	120,034,870	115,225,651	92,098,385	105,961,116

Note—Other oils includes all oils other than crude which are either purchased or withdrawn from stocks and run to stills during the week. The total of Items A and B is, therefore, the net quantity of materials consumed by the reporting refineries in producing the quantities of products shown as the result of the operation of the refineries during the week. Item K includes all stocks of oils, other than crude, held for further refining.

SINCLAIR'S SIGN of SERVICE SATISFACTION and SECURITY

The Stripes Signify—

1. **Large crude oil reserve.**
   (Through affiliated Companies)
2. **Modern refineries.**
3. **Petroleum products for general industrial demands.**
4. **Facilities for prompt domestic and foreign shipments.**
5. **Fair prices all the time.**
6. **Merchandise and service guaranteed.**
7. **Personnel proficiency in oil operations.**

SINCLAIR REFINING COMPANY

New York, Sinclair Oil Bldg., 45 Nassau St.
Chicago, 111 W. Washington St.
Cable Address: "Lucent"

"OILWELL" EST'D. 1862. C O TRADE MARK. (REGISTERED)

1862

62 YEAR

OIL WELL SUPP

PITTSBUGH

NEW YORK LOS ANGELES SA FRAN

90 Branch Stores — 20 Inch

QUALITY!

1862

"OILWELL" EST'D. 1862. C O TRADE MARK. (REGISTERED)

"OILWELL" ESTD. 1862 TRADE MARK. (REGISTERED)

1924

AR YOUNG

PPLY COMPANY

UGH, U. S. A.

SAN FRANCISCO TAMPICO LONDON

0 Inch Shops — 9 Factories

SERVICE!

1924

"OILWELL" ESTD. 1862 TRADE MARK. (REGISTERED)

Europeans Purchased More Oil in 1923

Outlook for 1924 Even More Favorable as Considerably Higher Prices Are Expected to Obtain

By N. O. Fanning

NEW YORK, Jan. 28.—The oil export situation on the Atlantic Seaboard during 1923 was favorable in regard to volume of business done, but unfavorable from the viewpoint of prices received for the products. Probably the most important factor was the maintenance of a good volume, as it indicates the fact that oil is growing in use in foreign countries, just as in the United States. This augurs well for the future of the oil export business.

The big production in California had a salutory effect upon the export business of the Atlantic Coast. The flush fields being very close to the port of Los Angeles, made the oil from them easily available for export. The result was that California oil entered into the export situation from the Atlantic Seaboard viewpoint in two respects. California products were shipped direct to foreign markets also supplied by the Atlantic Seaboard refiners, and the Atlantic Seaboard exporters in turn purchased California oil which ultimately found its way, after being refined on the Atlantic Coast, to foreign countries. Yet, as stated before, the export business of the Atlantic Coast held up despite the competition from the pacific.

Gain in Consumption Abroad

Ordinarily, it might be thought that the big volume of exports during 1923 would glut the foreign markets, which would result in depression in the oil export business this year. But oil exporters claim that the large shipments in 1923 measured merely the gain in consumption abroad, and that stocks abroad are not now unduly large. Perhaps the best estimate of the situation is that stocks are larger than at the commencement of 1923, but not large enough to threaten the market; they are in strong hands.

Leaders in supplying foreign markets, such as Standard Oil Co. of New Jersey, Anglo-American Oil Co., The Texas Co., Vacuum Oil, Royal Dutch and Anglo-Persian, to mention a few, seem optimistic regarding the outlook for 1924. These are the companies which are believed to hold the bulk of the surplus oil abroad. The Dutch-Shell combine, particularly, is understood to have built up large stocks of cheap crude and refined oil. It is a characteristic of foreign buyers to buy heavily when prices are low. This was one of the big factors also in stimulating oil consumption abroad in 1923. Gasoline was considerably cheaper in England, France and other European countries than in 1922; so were lubricants.

Trend of Export Prices

The trend of oil export prices can be measured by the fluctuations in quotations for export at New York. Motor gasoline in bulk (U. S. Navy) started the year at 15½ cents per gallon, advanced to **16½ cents in February** and then fell gradually to 10½ cents in November. It closed the year at this figure. Fluctuations in cased gasoline were approximately the same, slight variations being due to changes in cost of containers. Cased gasoline started out at 28¾ cents per gallon on January 2, advanced to 29¾ cents in February, and dropped to a low of 24.15 cents on October 9. It closed the year at 24.40 cents per gallon.

The drop in the export market for gasoline amounted to approximately 33 per cent from the high of the year. Cased gasoline at the low of 24.15 cents per gallon in the latter part of 1923, contrasts with a high for all time of 40.75 cents, established on January 31, 1921.

Kerosene export prices at New York followed a slightly different trend than gasoline, which reflects the domestic situation also. Domestic kerosene in New York is now 15 cents per gallon (tank wagon) as compared with 15½ cents for gasoline. The export price of Standard White in barrels is now 14 cents. The bulk export price of Standard White during the latter part of 1923 was 7 cents, as against 10½ cents for gasoline in bulk.

Standard White in bulk began 1923 at 7 cents, the same price at which it stood at the close. It dropped to a low of 5½ cents on July 5, advancing to 7 cents on October 23.

Lubricants Strong Feature

With regard to the Atlantic Seaboard export market in particular, lubricating oil was the feature. The largest part of the trade of the United States was handled from Atlantic ports. The lubricant exporters did a good business at fair prices. Wax was also in unusually good demand abroad—particularly in Italy.

Cylinder oils closed the year at slightly higher prices than existed at the beginning, while red oils were fractionally lower. Price movements during the year were irregular and narrow.

Wax prices were about 1 cent per pound higher at the close of 1923 than at the commencement of the year.

The bulk of the lubricating oil export business is handled through shipments by big exporters to their own distributing stations abroad, and prices are as at the stations in various countries, and are not quoted here.

The following table shows the record of export gasoline and kerosene prices here during 1923, cents per gallon:

	Motor Gasoline (U. S. Navy)		Kerosene (Standard White)		
	In Cases	In Bulk	In Bulk	In Bbls.	In Cases
January 2, 1923	28.75	15.50	7.00	13.25	15.40
February 23	29.75	16.50	....	.....	.....
April 20	29.25	16.00	6.50	.....	15.00
April 24	.....	.....	....	13.50	.....
April 27	28.25	15.00	6.00	13.00	15.50
June 2	28.65	.....	....	.....	15.90
July 5	27.15	13.50	5.50	12.50	15.40
August 17	26.15	12.50	....	.....	.....
September 17	26.05	12.00	....	.....	.....
October 9	25.15	11.50	....	.....	.....
October 15	.....	.....	6.00	13.00	15.30
October 23	.....	.....	7.00	14.00	16.30
November 12	24.15	10.50	....	.....	.....
November 28	24.40	.....	....	.....	17.15
January 2, 1924	24.40	10.50	7.00	14.00	17.15
January 7	25.40	11.50	....	.....	.....

The above dates (excepting January 2 each year) are those on which changes in prices were made, as indicated in the table.

Outlook for 1924

The export situation apparently differs in no great respect from the domestic as far as the price situation is concerned. Everything points to higher quotations, particularly for gasoline. As noted, January 7 of the current year already has brought an advance in gasoline prices of 1 cent per gallon. This is believed to be only the starting point.

Despite pessimistic utterances regarding the European situation (much of which come from abroad) the industrial outlook is said to be encouraging. Political conditions are quite bad, it is true, but much of the unfavorable comment serves as a smoke-screen to hide substantial business progress. The motor companies are doing their share in perfecting automobiles for use abroad, and report a steady expansion in their foreign business. Gasoline export trade should go along with it.

MAGNIFICENT ENERGY OF OIL MEN LAUDED BY SECRETARY OF INTERIOR

By Hubert Work

Secretary of the Interior

The United States has the largest oil and gas industry of any nation in the world.

This is due to the magnificent energy and daring of a small coterie of Americans, who risking their capital in the exploration of unknown fields, have uncovered hidden domes in remote and out-of-way places and developed the industry to its present volume of production.

Dr. Hubert Work

In many instances this search and exploration has led to tremendous financial losses, but with determination and perseverance the operators of this country have continued their quest. Nothing has deterred them in making the United States lead the world in the production of oil and gas.

It is my privilege to preside over a branch of the Government that plays no small role in the oil and gas industry. The Burbank oil field located on the Osage Indian reservation and under the direct control of the Interior Department is the richest field ever discovered. The public lands also are leased for the development of their mineral resources, the Government deriving a royalty upon all oil and gas produced, so that the success of the oil industry is a matter of vital interest to the Government as well as the American people, because of its direct cash contributions to the treasury of the United States.

New Oil Burner Club Formed at Chicago To Boost Movement

CHICAGO, Jan. 28.—Initial steps for the organization of a Chicago oil burner club were taken recently with more than 100 men present at a dinner in the Virginia Hotel, in this city. E. W. Fladley of the Winslow Engineering Co., Chicago, was temporary chairman, during the organization process. Seven temporary directors were selected to choose a name for the new club, select a list of officers to be approved at an early meeting and to draw up a constitution.

Burner men and oil dealers alike were interested in the original proceedings and the attendance was about equally divided. Of the seven temporary directors, five were burner men and two were oil men.

L. V. Nicholas, president of the National Petroleum Marketers Association, was present and prompted both sides to adopt a "service" program. He declared that the burner men would have to make service their major interest, rather than economy of fuel. He predicted a large increase in the price of distillate and burner oil with the anticipated advances in the price of crude oil. He asserted that burners could be sold at increased cost of operation if proper attention was given the installations after they were in place.

He suggested for the benefit of both oil and burner men that the burner equipment should be adapted to a fuel which could be produced in larger quantities at a low price, and which would meet all requirements for heating. It was pointed out that this would mean a lower grade of burning oil for use in the installations.

A representative of Henry L. Doherty, who has been a prime mover in the organization of burner clubs in the eastern part of the country, was present and spoke to the men. He reviewed the success of the work in the larger cities where clubs had been formed. The new club is intended to include within its membership all those interested in the oil burner industry, as manufacturers or distributors of the installations, insurance and fire authorities, engineers and oil men.

PERFECTION VAPOR PRESSURE TANKS
WOOD, AND BOLTED STEEL TANKS

INDISPUTABLE EVIDENCE NO. 11

SINCLAIR OIL AND GAS COMPANY

Covington, Okla.
Nov. 9,1923.

B.B.Ab Tank Co.
Box 74
Tulsa, Okla.

Attention Mr. W.N. Elliott.

My Dear Mr. Elliott

I will give you some interesting information as to the use of your perfection vapor pressure tanks. During the hot weather of the past summer I made a number of tests of losses from evaporation in open top steel tanks also the saving by use of the perfection vapor pressure steel tanks. The tanks being located on the same farm and in the same tank battery. On the same date I filled the perfection vapor pressure tank and the open top tank each with seven feet ten inches of fresh Garber crude of 46 gravity, after allowing each of the tanks to stand six days both tanks were turned into the pipe line. The perfection vapor pressure tank was gauged at seven feet ten and one half inches an increase of one half inch. The open top tank was turned into the pipe line at seven feet four inches, in which showed a loss from evaporation of six inches. Both of these tanks were of a 250 barrel capacity. I have made a number of other tests which are equally as interesting.

We have one hundred and twenty three stock tanks on our Garber property in which we are changing to perfection vapor pressure tanks. I have made a close survey of the loss of production from the open top tanks and find by using the perfection vapor pressure tanks on the entire property with our present production that we will have each month an additional saving of $12,000.00 basing my figures on the present price of Garber crude.

We are also using some of your perfection vapor pressure flow tanks of 210 barrel capacity in which we find to be money savers for us, especially when we have flowing wells. They not only save us evaporation and loss of oil but are used as a reservoir that our gasoline plant can take the gas from with out using additional equipment.

The perfection vapor pressure tanks are being made a standard in this particular field and should be made a standard in all fields where high gravity crude is produced. I am giving you this information to show you the great saving that our Company will receive when the entire property is equipted with the perfection vapor pressure tanks.

Yours very truly

CE/?

"Perfection Vapor Pressure Tanks are being made a standard in this particular field and should be a standard in all fields."

Well might the superintendent for the Sinclair Oil and Gas Company at Garber, Okla., recommend that Perfection Vapor Pressure Tanks be made a standard in all fields!

For an estimated saving of $12,000 a month on his company's property at Garber ought to make anyone enthusiastic.

And the letter above is only one of the many we have on file bearing out the claims we have been making for Perfection Tanks.

You should not hesitate another day in getting in touch with our representative in your district, now that the oil business is getting better every day.

As we have demonstrated time and time again, the purchase of a battery of Perfection lease tanks will not mean any outlay in the long run—the battery will pay for itself.

An investment instead of an expense.

Black Sivalls & Bryson
INC.

BARTLESVILLE ~ OKLAHOMA

Branch offices in all principal active fields

Probable Oil Production in U. S. During 192

Estimate, Field by Field, Based on Record and Five-Year Average Looked for Only in Rocky Mountain Region and in Arkansas

By Charles E. Bowles
Vice President, Foster and Bowles Corp.

Geographically, there are four great oil producing areas in the United States: the eastern area lies east of the Mississippi—the Mid-Continent includes Kansas, Oklahoma, Texas (with the Gulf Coast), Arkansas and Louisiana—the Rocky Mountain area includes Wyoming, Montana and Colorado, and the Pacific Coast is represented by California.

From the drilling of the Drake well in 1859 to the end of the year 1900 (a little over 41 years) all of the oil fields of the United States had produced a total of one billion barrels of oil. When we started on our second billion barrels (January 1, 1901) there were 20,000 automobiles registered in the entire United States. From that date to the fall of 1923 (about 22 and a half years) we produced six billion barrels of oil, and had a registration of almost 15,000,000 cars and trucks.

Our seven million barrels of oil was produced in about a year and a half (April 1, 1922, to the fall of 1923), which means that our production of crude oil has been hitting around 700 million barrels a year. We heard so much about "an impending oil famine" during the war, and so much about "overproduction" in 1923, that one needs no alibi for trying to figure out the probabilities of crude oil production in 1924, with the "basic trend" of the industrial development of the United States as a background.

Of the six and a half billion barrels of crude oil produced in the United States from 1859 to the end of 1922, the eastern area produced over two billion barrels, or almost exactly one-third of our total production. The three western fields (Mid-Continent, Rocky Mountain and Pacific Coast) produced two-thirds of our total oil.

East's Strategic Position

If you will refer to the graph marked "Eastern States" you will note that during the last 20 years the production of this area has been declining, slowly but surely, and that no new major fields have been brought in. If we take the five-year period, January 1, 1918, to December 31, 1922, we find that the eastern area produced 10 per cent of its entire output of oil within this period, and 90 per cent of it from 1859 to the end of 1917.

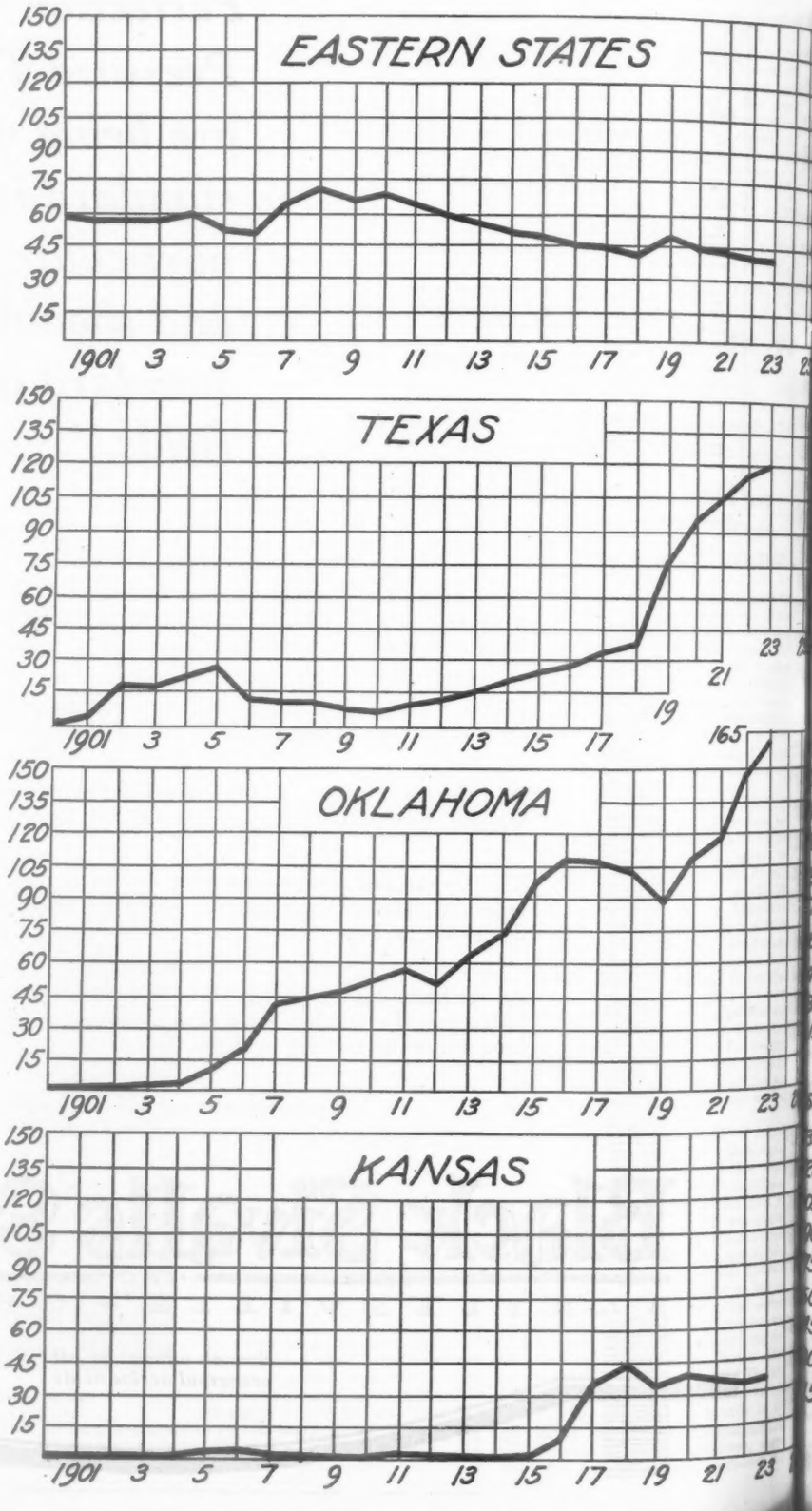
Quantitatively, the entire production of the eastern area is not a large factor, as it produced only about 6 per cent of the oil of the United States in 1923. Qualitatively, it is a very important factor, expecially from the standpoint of its lubricating oils. Due largely to its being the cradle of American oil, its rich later history and its strategic position in the same territory with the great bulk of America's financing capital, the East is, psychologically, a most potent factor as a "price-maker."

This area is today producing about 110,000 barrels a day, or 40,000,000 barrels a year. In the light of the last 20 years shown by the graph this area cannot be depended upon to produce more than 40,000,000 barrels in 1924.

Probabilities in Texas

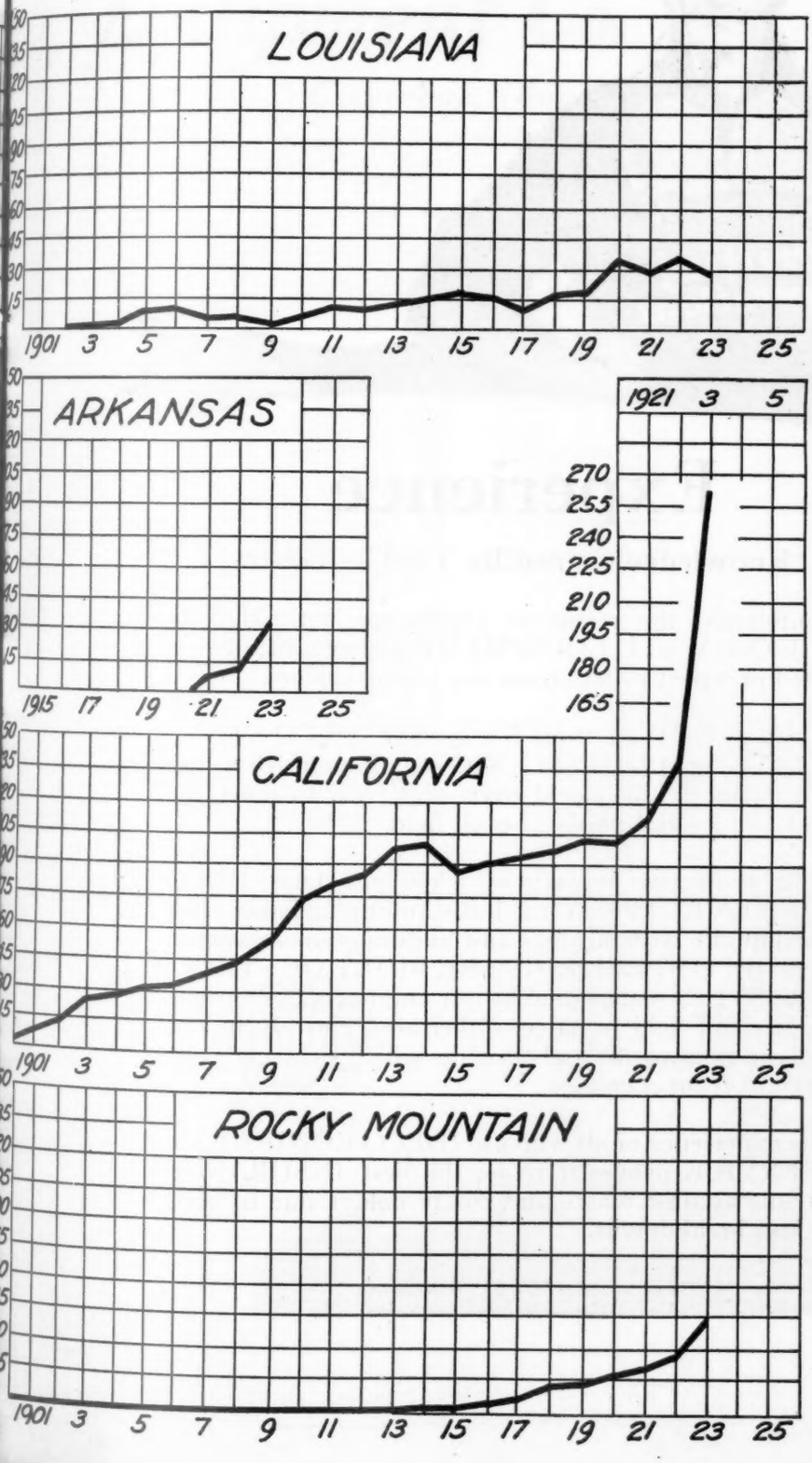
To the end of 1922 Texas had produced over 725,000,000 barrels of oil, of which 60 per cent (435,000,000 barrels) was produced in the last five years. Texas today has four major producing areas: North Texas (Wichita and Archer Counties), which is producing about 65,000 barrels a day—the Ranger district (Stevens and Eastland Counties and a number of small scattered pools) that is producing about 50,000 barrels a day—the Mexia-Powell district (Limestone and Navarro Counties) that the first of this year was producing about 132,000 barrels a day, and the Gulf Coast district, that was producing about 86,000 barrels a day. These four areas are producing a total of about 333,000 barrels a day, or at the rate of about 120,000,000 barrels a year. This is about what Texas produced in 1923.

The curve for Texas shows that her big production has come within the last five years of which 1923 was the biggest. In analyzing the four areas (North Texas, Ranger, Mexia-Powell and Gulf Coast) that are today producing the State's oil we find the Burkburnett boom, the Ranger boom and the Mexia-Powell boom, all within the last five years, and within which time Texas has produced over 60 per cent of her total oil. In analyzing these four areas for 1924 we find Wichita County very probably past her peak, while Archer County promises some increase in 1924. Ranger is "over the top," and on the decline. With the areal limits clearly defined both Mexia and Powell have definitely passed the peak, while the Gulf Coast is slowly declining. As the situation stands today the only apparent chance for Texas in 1924 to equal her 1923 production is along the Balcones Fault north of Powell, and this area may prove to be another Kosse. Mexia boosted the production in 1921 and 1922, but the net result of the flood of oil from Powell in 1923 was to increase the State's production only about 4,000,000 barrels over 1922, thereby clearly demonstrating that "it takes a big field to replace a big field."



1924 May Not Exceed 675,000,000 Bbls.

Predicts Output of 46,000,000 Barrels Less Than During 1923. Increases Must Offset Decline in Flush Fields of Last Year to Meet Consumption



In other words, it took a Powell to give Texas an increase of about 4,000,000 barrels, against the background of a waning Mexia.

With Mexia, Powell, Ranger and the Gulf Coast on the decline, and little promise of anything like large production from Wichita and Archer Counties, it is probable that Texas will not produce much over 100,000,000 barrels of oil in 1924, and certainly not, unless a new big field is brought in.

Oklahoma's Outlook

Oklahoma had produced over 1,300,000,000 barrels of oil to the end of 1922, and 43 per cent of it had come within the five years from January 1, 1918, to December 31, 1922.

With the exception of a one-year setback in 1912 and a two-year setback in 1918 and 1919, Oklahoma production has grown steadily from practically nothing in 1900 to about 165,000,000 barrels in 1923. Burbank and Tonkawa have been the big factors the last couple of years, but with the State's production running around 360,000 barrels a day, present indications are that 1924 may see less oil produced in Oklahoma than 1923. Allowing 400,000 barrels a day (or 40,000 barrels a day more than we are producing today), would give us only 140,000,000 barrels in 1924, and present indications are that this is a conservative estimate.

Two El Dorados

Butler County made Kansas a real oil State, and as Butler County's production slowly ebbs no other real fields have been brought in. The present production is around 70,000 barrels a day, or about 25,000,000 barrels a year. Without the bringing in of substantial new fields, Kansas will produce less than 30,000,000 barrels in 1924.

The Gulf Coast of Louisiana has produced little oil in the past and is producing almost none today. Within the last five years Homer and Haynesville have revived and increased oil production in northern Louisiana. The State produced 17,000,000 barrels in 1919, and Homer jumped it to 37,000,000 in 1920. It dropped back to 26,000,000 in 1921, and Haynesville shot it up to 35,000,000 barrels in 1922. Louisiana produced less than 24,000,000 barrels in 1923, and with a present production of about 50,000 barrels, the State will probably not produce 20,000,000 barrels of crude oil in 1924, certainly not, unless new fields are brought in.

El Dorado skyrocketed Arkansas into the limelight by producing 11,000,000 barrels in 1921, as compared with nothing for the State in 1920. It is a striking coincidence that two El Dorados put two oil States "on the map." In 1922 Arkansas produced 16,000,000 barrels, and in 1923 Smackover helped raise it to over 34,000,000. The production today is running about 100,000 barrels a day, or at the rate of about 35,000,000 barrels a year. Let's figure Arkansas at 40,000,000 for 1924.

California Production

Except in 1915, California's production has increased every year for the last 20 years. The big increase came when it jumped from close to 140,000,000 barrels in 1922 to about 262,000,000 in 1923, an increase of over 120,000,000 barrels, or over 80 per cent, in one year.

In comparing the eight graphs accompanying this article one is amazed at California's growth. From 1876 to the end of 1922 she produced over 1,500,000,000 barrels of oil, and 35 per cent of all of it came within the last five years. Today she is producing about 700,000 barrels a day, or at the rate of 250,000,000 barrels a year.

At the present time California has two major producing areas: the San Joaquin Valley and the Los Angeles Basin. The production from the San Joaquin Valley, which includes Coalinga, Midway-Sunset, McKittrick and Kern River Fields, is old and settled and nothing in the shape of either new fields or a large increase in the present fields seems to be in sight for 1924. In the Los Angeles Basin, the production from the Santa Fe Springs, Huntington Beach and Long Beach Fields seems to have definitely passed its peak. Each of these three great fields seems to be clearly defined, both as to area and the location and probable productivity of sands, so that their aggregate production in 1924 will probably be very substantially less than for 1923.

Apparently the only question mark in California oil for 1924 is Torrance, Redondo Beach and Compton. If the development of these three new fields is left to the big oil companies they will be developed slowly, sanely and constructively to the industry as a whole and to California in particular. If the novices, the promoters and the Get-Rich-Quick Wallingfords get into these new fields as they did into Signal Hill, Santa Fe Springs and Huntington Beach last year, and if these new fields are prolific in oil, then California may give us a repetition of 1923, some time this year.

If left to conservative development, even though the new fields are prolific, it is probable that the slowly increasing production from the three new fields will not take care of the depletion of the three fields developed in 1923. Conceding

(Continued on Page 120)

Experience

"Knowledge Gained By Trial"—*Webster*

Confidence, the result of experience with IDECO STEEL OIL WELL EQUIPMENT, is constantly being reflected in repeat orders from the big producers.

If it is an Oil Well, there is a specific IDECO STEEL DRILLING or PUMPING RIG—equipment that has proved its merit the world over—designed to meet the general and special needs of each field.

Your protection is *built in* when you buy IDECO EQUIPMENT. All that was left standing in Tokio after the earthquake were bridges and buildings of *Structural Steel.* IDECO STEEL RIGS ARE BUILT OF STRUCTURAL STEEL—designed by our engineers to conform to the best oil field practice—fabricated entirely in our own plant even to the galvanizing which protects your investment from corrosion.

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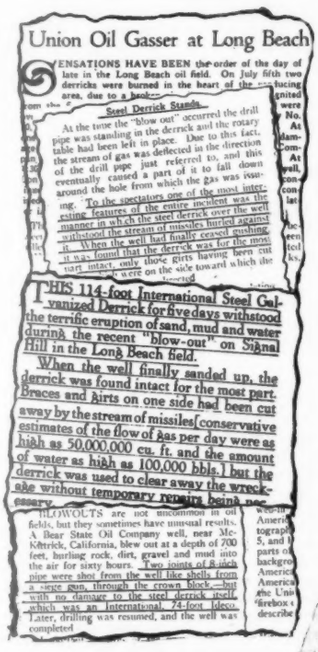
The Largest Company Devoted Exclusively to the Manufacture of Steel (Galvanized) Equipment for the Oil, Gas and Artesian Industries.



Union Oil Gasser at Long Beach

SENSATIONS HAVE BEEN the order of the day of late in the Long Beach oil field. On July fifth two derricks were burned in the heart of the producing area, due to a boiler explosion from the [illegible] ignited and were completely destroyed. No. 4 of the Associated Oil Company and No. 1 of the Ohio Oil Company. At the time the latter well, which was being drilled by contract, was drilling at 3,000 ft. and was making a showing of oil.

Steel Derrick Stands.

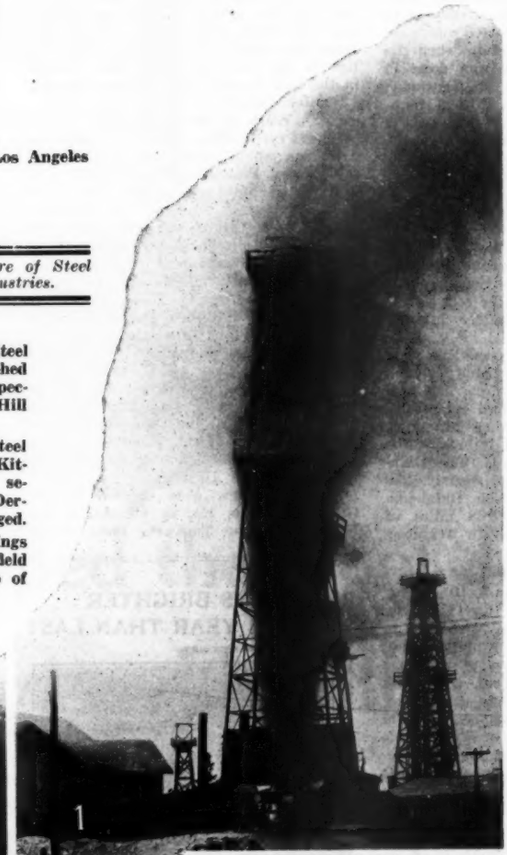
At the time the "blow out" occurred the drill pipe was standing in the derrick and the rotary table had been left in the derrick floor. Due to this fact, the stream of gas was deflected in the direction of the drill pipe just referred to, and this eventually caused a part of it to fall down around the hole from which the gas was issuing. To the spectators one of the most interesting features of the entire incident was the manner in which the steel derrick over the well withstood the stream of missiles hurled against it. When the well had finally ceased gushing, it was found that the derrick was for the most part intact, only those girts having been cut away which were on the side toward which the [illegible] leaned.

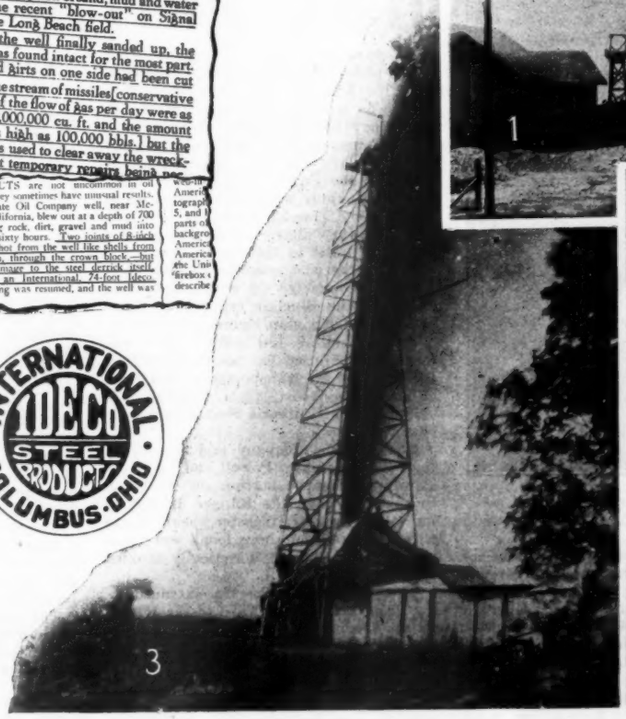
THIS 114-foot International Steel Galvanized Derrick for five days withstood the terrific eruption of sand, mud and water during the recent "blow-out" on Signal Hill in the Long Beach field.

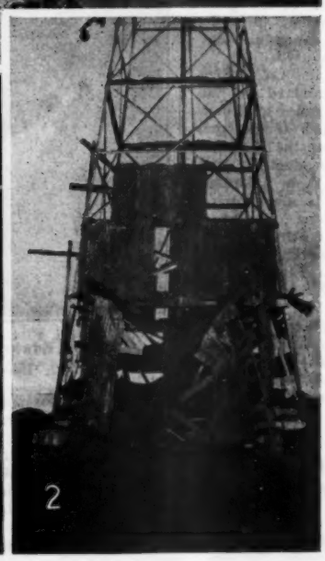
When the well finally sanded up, the derrick was found intact for the most part. Braces and girts on one side had been cut away by the stream of missiles conservative estimates of the flow of gas per day were as high as 50,000,000 cu. ft. and the amount of water as high as 100,000 bbls. But the derrick was used to clear away the wreckage without temporary repairs being necessary.

BLOWOUTS are not uncommon in oil fields, but they sometimes have unusual results. A Bear State Oil Company well, near McKittrick, California, blew out at a depth of 700 feet, hurling rock, dirt, gravel and mud into the air for sixty hours. Two joints of 8-inch pipe were shot from the well like shells from a siege gun, through the crown block,—but with no damage to the steel derrick itself, which was an International 74-foot Ideco. Later, drilling was resumed, and the well was completed

1. **IDECO 114-foot Steel Derrick photographed during action of spectacular Signal Hill "gasser."**
2. **IDECO 74-foot Steel Derrick near McKittrick, Cal., after severe "blow-out." Derrick was not damaged.**
3. **IDECO Derrick brings in well in Ohio field after another type of equipment failed.**







INTERNATIONAL IDECO STEEL PRODUCTS COLUMBUS-OHIO

Much Pipe Line Construction in 1923

Two Big Main Lines Started and a Host of Smaller Ones Were Laid in All the Big Producing Divisions

The year 1923 was a busy one for the pipe line builder. The large number of new pools developed in several States last year made it necessary to construct many short lines from the fields to the main lines of the transportation companies, and two important extensions to trunk line systems were started and were well on the way to completion when the year ended. Little work was done in the eastern fields outside of Kentucky, but in the Mid-Continent, Rocky Mountain and California fields it was a year of more than usual activity for the pipe liner, who seldom tarries when there is a pool in sight that assures a supply of crude.

Before the end of spring the pipe line systems of the United States will be well able to handle all the oil the known fields will produce and there will not be an important producing division in the land that will not have a direct carrying line to either the Pacific, Atlantic or Gulf Coast.

The most important extensions were those of the Sinclair Pipe Line Co. and the Oklahoma Pipe Line Co. The Sinclair company worked on two extensions, one 720 miles and the other 180 miles in length, besides looping its main line from Oklahoma to Chicago. The Oklahoma Pipe Line Co. laid nearly 250 miles of line from northern Oklahoma into Arkansas and over 168 miles of line from Hewitt, Okla., to an Arkansas junction.

The Teapot Dome Line

Work on the combination 8, 10 and 12-inch line of the Sinclair Pipe Line Co. from the Teapot Dome in Wyoming to Freeman, Mo., progressed rapidly during the fall, although the close of the year found it far from completion, with little prospect that it would be finished before spring, due to delay occasioned by cold weather. There was still considerable work to be done in Wyoming and Nebraska, while the Kansas section was farthest from completion.

This line is a little less than 720 miles in length, with 10-inch pipe in the high pressure areas and 12-inch at low pressure points. In three places, on hills, two of which are in Wyoming and one in Kansas, 8-inch pipe is used.

The Oklahoma Pipe Line Co., which is a subsidiary of the Standard Oil Co. of New Jersey laid 22.3 miles of 6-inch and 221.35 miles of 8-inch trunk line, increasing its capacity from the Burbank Field in Oklahoma to its junction with the Standard Pipe Line Co. in Arkansas to 50,000 bbls. a day. It also started and is now rapidly nearing completion on a line from the Hewitt Field in Carter County, Oklahoma, to its junction with the Standard Pipe Line Co. in Arkansas, a distance of 168.8 miles. This line will be 8-inch for 150.3 miles and 10-inch for 18½ miles. It will be completed in April and will have a capacity of 20,000 bbls. a day. The Carter Oil Co., another Standard of New Jersey subsidiary, has about 15,000,000 bbls. of crude in storage in Carter County, which may readily be marketed when the new Hewitt line is finished. The additions and extensions to the Oklahoma company's lines in 1923 and this year will mean the expenditure of about $6,000,000.

The Ozark Pipe Line Co., owned by the Royal Dutch-Shell interests, did considerable pipe line building last year in the Mid-Continent Field. It laid a combination 6-inch and 4-inch line with a capacity of 5,000 bbls. a day from Tonkawa to Burbank, Okla., a distance of 31 miles, and a 6-inch line from the Tonkawa Field to the Roxana Petroleum Co.'s refinery in Arkansas City, Kans., a distance of 36 miles. A 6-inch loop was laid from the Tonkawa Field to the company's transit station in Cushing, Okla. The entire length of the line is 50 miles and the loop 40 miles. A 4-inch line was laid from Cushing to Bristow, 18 miles, and another 4-inch line from the middle of the Cushing-Bristow line to the company's Key West station in the new Stroud Pool, Lincoln County, 12 miles distant.

Work of the Companies

The Prairie Pipe Line Co. made no extension worth mentioning in 1923 and the Cosden Pipe Line Co. did little. It started to build an 8-inch line from Hominy, Osage County, to Sapulpa, Creek County, Oklahoma, to replace two 6-inch lines, but did not complete it.

The Texas Pipe Line Co. of Oklahoma laid one combination 8-inch and 6-inch line from Hominy to Tonkawa. There was 10 miles of 6-inch and 40 miles of 8-inch included in this extension.

The Magnolia Petroleum Co.'s 5-inch line from Shawnee to Wewoka, Okla., was started but it was not finished at the close of the year. The company also worked on a line from the Duncan Field to the Cement Field, in Caddo County, Oklahoma, but it was not finished by New Year's Day.

The only new area entered by the Gulf Pipe Line Co. in Oklahoma and Kansas was the Tonkawa Field, where a station was built and a 33-mile line of 6-inch pipe was laid west from the company's Pawnee station. The Tonkawa station consists of two 100 horse power units. A one-unit, 100 horse power station was constructed in the Burbank Field, and various units were added to other stations, including two at Pawnee, two at Drumright and four on the company's main north and south line. Other pipe line construction of the Gulf consisted of 31½ miles of 6-inch loop from the Drumright station north to the Pawnee station; an 11-mile, 6-inch loop from the latter station north toward the Burbank area; an 11-mile 6-inch loop between Perryman, the farthest north station in Oklahoma, and the Drumright station. The amount of 8-inch loop added to the main north and south line between various pump stations from Perryman to the Red River totaled 39.28 miles.

Work done on the pipe lines of the Kay County Gas Co. (Marland Oil Co.) in 1923 brought the total mileage of the lines up to 390, including gathering trunk lines in Kay, Osage, Pawnee, Noble and Garfield Counties in Oklahoma.

Several important extensions were made to the gathering system of the Empire Pipe Line Co. during the year, chief among which were new lines into the Greenwood County, Kansas, fields, the Wetumka district in Hughes County, Oklahoma, and into the Tonkawa Field.

Pipe Lines in Texas

The sudden development of the Powell Field in Texas with its consequent flood of production made necessary the quick supplying of pipe lines to care for the oil. It is estimated that approximately $7,000,000 was expended in that section for extensions and in looping the trunk lines south to the Coast.

No new lines were laid in the Gulf Coast pools. On the contrary the Humble Pipe Line Co. and the Texas Pipe Line Co. took up the auxiliary 8-inch lines they had in service between the West Columbia Pool and points on the Houston ship channel. Each company now has one line to that pool. A few new connections were made in the Hull Pool by the Humble Company and also in the Orange district, otherwise it was unusually quiet in the coastal pools.

During the past year the Sinclair Pipe Line Co. completed an 8-inch line from Mexia to the Sinclair refinery at Sinco on the Houston ship channel, a distance of approximately 180 miles. That line is now being used by the Humble Pipe Line Co. for the transportation of Powell crude to the coast, from whence it is shipped to the Atlantic Seaboard refineries in tankers.

The Humble Company laid two 8-inch lines from Mexia to Powell and two from Powell to Hearne station on its trunk line coming from the Ranger district to its tank farm at Webster, near Texas City. In addition long loops were laid on the trunk line that practically doubled its capacity.

The Texas Pipe Line Co. extended its line from Mexia northward to the Powell Field. During the Mexia boom, the Humble, The Texas Co., Sinclair and Humphreys-Pure Oil Pipe Line Companies laid lines t o that field and when Powell opened these lines were extended northward. The Humble, The Texas and Humphrey-Pure Oil lines ran down to the coast,, the Humble pipe line terminating at Webster; The Texas Co.'s line at Port Arthur and the Humphreys-Pure Oil at Smith's Bluff, on the Neches River, a few miles below Beaumont. The Sinclair and Prairie lines went north to connect with their long trunk lines which run north and east.

In addition to the Powell-Mexia lines, the Texas Pipe Line Co. also laid an 8-inch line from Altus station, near Shreveport, to the Smackover, Arkansas, Field and looped its Louisiana-Port Arthur line, practically giving it two lines from north Louisiana to the refinery at Port Arthur.

The Magnolia Petroleum Co. extended short gathering lines from its Corsicana station to the Powell district. The company has three trunk lines from Corsicana to its refinery at Beaumont.

Line to Smith's Bluff

The Humphreys-Pure Oil Pipe Line Co. made provision for long loops on its 8-inch trunk line from Mexia to Smith's Bluff, which was laid during the Mexia boom. The Pure Oil Co. has just completed a 10,000-bbl. refinery at Smith's Bluff. The Cross high pressure system is installed and the first test run was made recently. Officials of the pipe line company have recently been visiting the pumping stations to determine the extent of the additional pumps and engines to be installed.

The Gulf Pipe Line Co. has just finished a 6-inch line from Powell to Lufkin, Tex., where it connects with the company's trunk lines from north Louisiana, North Texas and Oklahoma to the big refinery of the Gulf Company at Port Arthur.

Short lines were laid at Texas City by the Marland Refining Co. and the Swiftsure Petroleum Co. These extend from the two plants to the docks, a distance of one-half mile.

The Magnolia, National Petroleum Co. and Grayburg Oil Co. each laid 6-inch lines from the Luling Field to Oilfields, a loading rack station on the San Antonio & Aransas Pass Railroad, 5 miles from the fields.

The Magnolia Petroleum Co. and the Texpata Pipe Line Co. made short extensions in the Laredo district to Mirando City on the Tex Mex Railway, where the oil is loaded out in tank cars. These are 4-inch lines.

The Grubstake Investment Co. laid a 6-inch line from the Calliham Field to Three Rivers in Live Oak County, a distance of 11 miles, the crude being shipped in tank cars from Three Rivers.

In North Louisiana and Arkansas

Practically all of the new oil pipe lines in the Arkansas-North Louisiana territory, laid during the past year were in Arkansas as a result of the new fields at Smackover, Louann and Norphlet.

Six trunk lines were built during the past year from Smackover to El Dorado, where they connect with lines to Shreveport, Baton Rouge or the Coast.

The Standard Oil Co. built 17 miles of 8-inch line from Smackover to El Dorado and increased the capacity of its line from El Dorado to Haynesville 20,000 barrels by a series of loops.

The Atlantic Oil Production Co. built a 6-inch line from the Stephens Field in Columbia and Ouachita Counties, Arkansas, through Smackover to Haynesville, La., a distance of 30 miles.

The Lion Oil Refining Co., with refinery located at El Dorado built a complete system of main and gathering lines throughout the Smackover, Louann and Norphlet Fields, the main lines approximating 40 miles in length.

The Shreveport-El Dorado Pipe Line Co., J. B. and J. W. Atkins, built an 8-inch line from Shreveport to El Dorado, a distance of 90 miles.

The Texas Pipe Line Co. has built the largest pipe line between Louana, in the west end of the Smackover dis-

(Continued on Page 158)

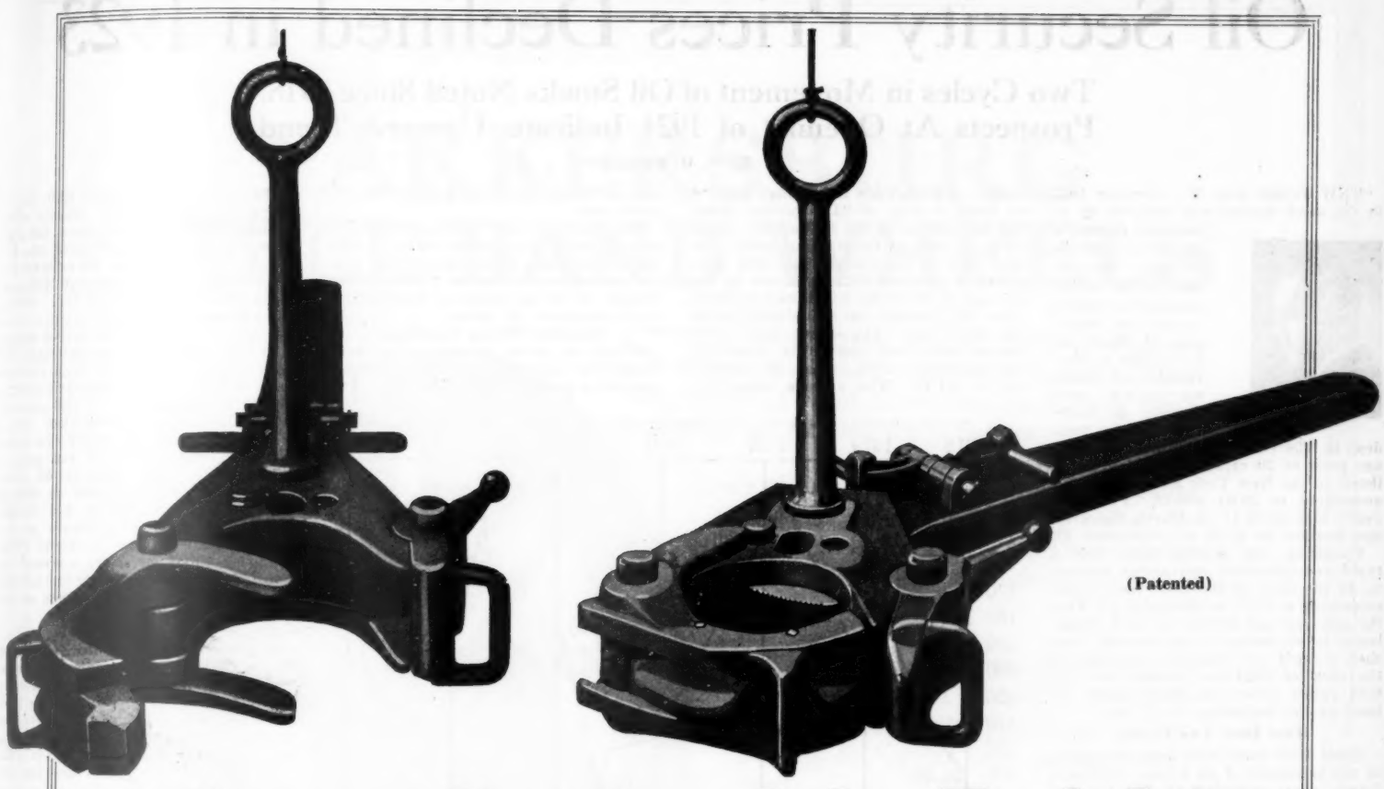
PROSPECTS BRIGHTER THIS YEAR THAN LAST

By Edward Prizer
President, Vacuum Oil Co.

While I do not feel the petroleum industry has as yet surmounted all the difficulties it has been contending with, I think the prospects this year are much better than last. Much, however, will depend upon conditions which the industry cannot control.

If Congress, by the adpotion of a satisfactory tax bill, will ease the country's present tax burdens, I look for good business generally in the United States, but a continuance of unwise taxes will check business expansion.

Unfortunately the European situation remains extremely bad, and the volume of export business will depend upon an early improvement.



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3. SPRING LATCH. Latch automatically catches, when jaws close.
4. SURE GRIP. Handle secures a powerful leverage on cam-die, insuring a non-slip grip on the hardest tool joint.
5. PLENTY OF TAKE-UP. Cam-die has a full inch of play, affording plenty of take-up for worn down joints.
6. INSTANTLY REVERSIBLE. Cam-die pin is merely shifted and pawls on handle readjusted.
7. EASILY DETACHED. Tong is detached by an easy blow on latch.
8. SAFE. Will not come open accidentally, causing accidents.
9. NO DAMAGE TO JOINTS. The non-slip grip is easy on tool joints.
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GUIBERSON

BETTER BE SAFE THAN SORRY

Oil Security Prices Declined in 1923

Two Cycles in Movement of Oil Stocks Noted Since 1918. Prospects At Opening of 1924 Indicate Upward Trend

By N. O. Fanning

NEW YORK, Jan. 28.—The year 1923 in the stock market was featured by an extended decline in the price of oil securities. For approximately seven consecutive months—from the beginning of March to the middle of September—oil stocks declined with scarcely an interruption, the total drop in The Oil and Gas Journal's average price of 20 representative oil stocks listed on the New York Stock Exchange, amounting to 20.64 points. From the year's high of 62.17 on March, the average declined to 41.43 on September 18.

Following this decline there was a rapid and somewhat spectacular advance up to the close of the year, the average recovering to 53.77 on December 31. That the new year has started out with irregularity in oil stocks is only natural after such a rapid and unbroken advance. At the close of 1923 the average was still 6.33 points below the figure which existed at the beginning of the year.

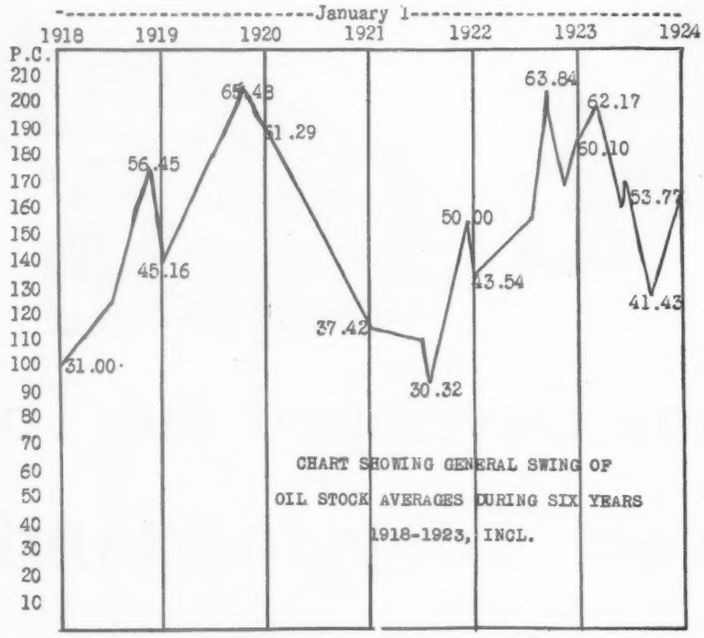
Have Been Two Cycles

Since 1918 there have been two cycles in the movement of oil stocks. Taking a former chart compiled by The Oil and Gas Journal and fitting it into the regular averages which have been maintained since April, 1922, an idea of the range of oil stocks since January 1, 1918, or at about the close of the World War, can be obtained. Using the opening quotation of 10 representative oil stocks for 1918 as 100 per cent, which corresponds to 31.00 for the present average, there was an advance throughout 1918 and well into 1919, which amounted to approximately 34.48 points, or more than 100 per cent over the beginning of 1918. The cycle was completed about the middle of 1921, when the average dropped to 30.32, a drop of 36.16 points, bringing the average of the 10 stocks to about 92½ per cent of the starting point. The first half of the second cycle was completed in October, 1922, as shown by the average of 20 stocks, which rose to 63.84, up to 33.52 points, but still slightly below the 1919 high. The second half of the second cycle was, apparently, completed in September, 1923, when the average fell to 41.43. The average closed the year at 53.77, up 12.34 points from the year's low.

The study of the chart showing the general swing of oil stock averages during the six years shows graphically how the price of oil securities actually reflects changes in the oil situation, and particularly changes in oil prices.

Securities Reflect Conditions

Crude oil prices, as well as the price of gasoline and other petroleum products, reached a peak in 1920. The price of oil stocks rose during 1918 and 1919, anticipating this development. Shortly after the beginning of 1921 oil prices fell rapidly. Oil securities anticipated this development, as shown by the extended reaction which continued through 1920, and ended about the middle of 1921. There was a temporary recovery in oil prices at the close of 1921, and the outlook during 1922 was considered quite favorable. Oil stock prices rose rapidly from the low point of 1921 until near the close of 1922, when a new reaction set in. This reflected the California overproduction, which helped bring about extremely low prices for both crude petroleum and gasoline during 1923. The drop in oil stock prices was not as extended as that of 1920-1921, as the reaction was checked by the falling off in California production and the collapse of the Powell Field. Oil prices have not shown a general advance, however, although the late advance in oil securities may anticipate an advance in prices this year.



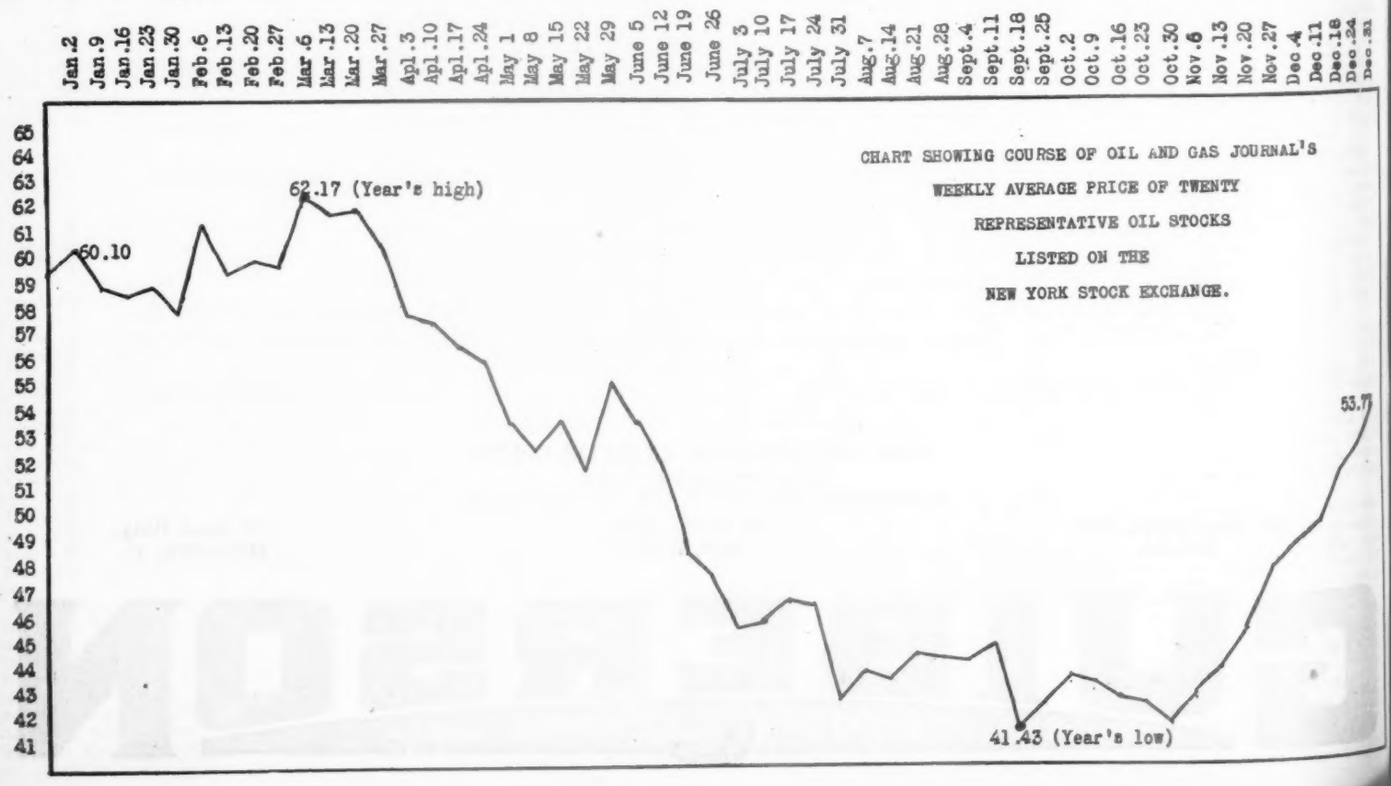
The Outlook for 1924

The recent rise in oil securities, shown in the chart, raises an interesting question as to whether this is the beginning of a new cycle which will raise the price of oil stocks to new high record levels, or is only a temporary halt in the decline which actually commenced late in 1922.

No one could attempt to make any predictions regarding this, but an optimist might figure it this way:

The demand for oil products is constantly increasing. The present demand is much greater than during the year 1920. If it were not for the low prices that have existed during 1923, no doubt oil stocks would have long since risen to heights above those of 1919, when the peak in the average, 65.48, was reached. There is now a prospect for a general improvement in oil prices in 1924, and provided a normal rate of increase in consumption is effected, there should be

(Continued on Page 156)



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STEEL Angle Arms, securely riveted to circles of Steel Cants and bolted to a Pareelite* Shaft Hub, provide a band wheel framework that eliminates the use of band wheel flanges.

Rows of standard wooden band wheel cants, staggered and nailed together, are bolted between the steel cant circles, and evenly compressed throughout the circumference of the wheel.

Parkersburg Steel Band Wheels are made in standard diameters, faced for standard width belting, and can be supplied to fit regular sizes of band wheel shafts.

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bolted to the steel angle arms, are supplied as regular equipment.

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*Pareelite is a "High Manganese" metal—not cast iron—that will sustain a load of 4320 lbs. on arbitration test bar of the American Society for Testing Materials, and with only 7/64th inch deflection at breaking point. It has an ultimate tensile strength of 33,680 lbs. per square inch.

In *elasticity* Pareelite approaches more nearly to cast steel than any other cast ferrous metal!

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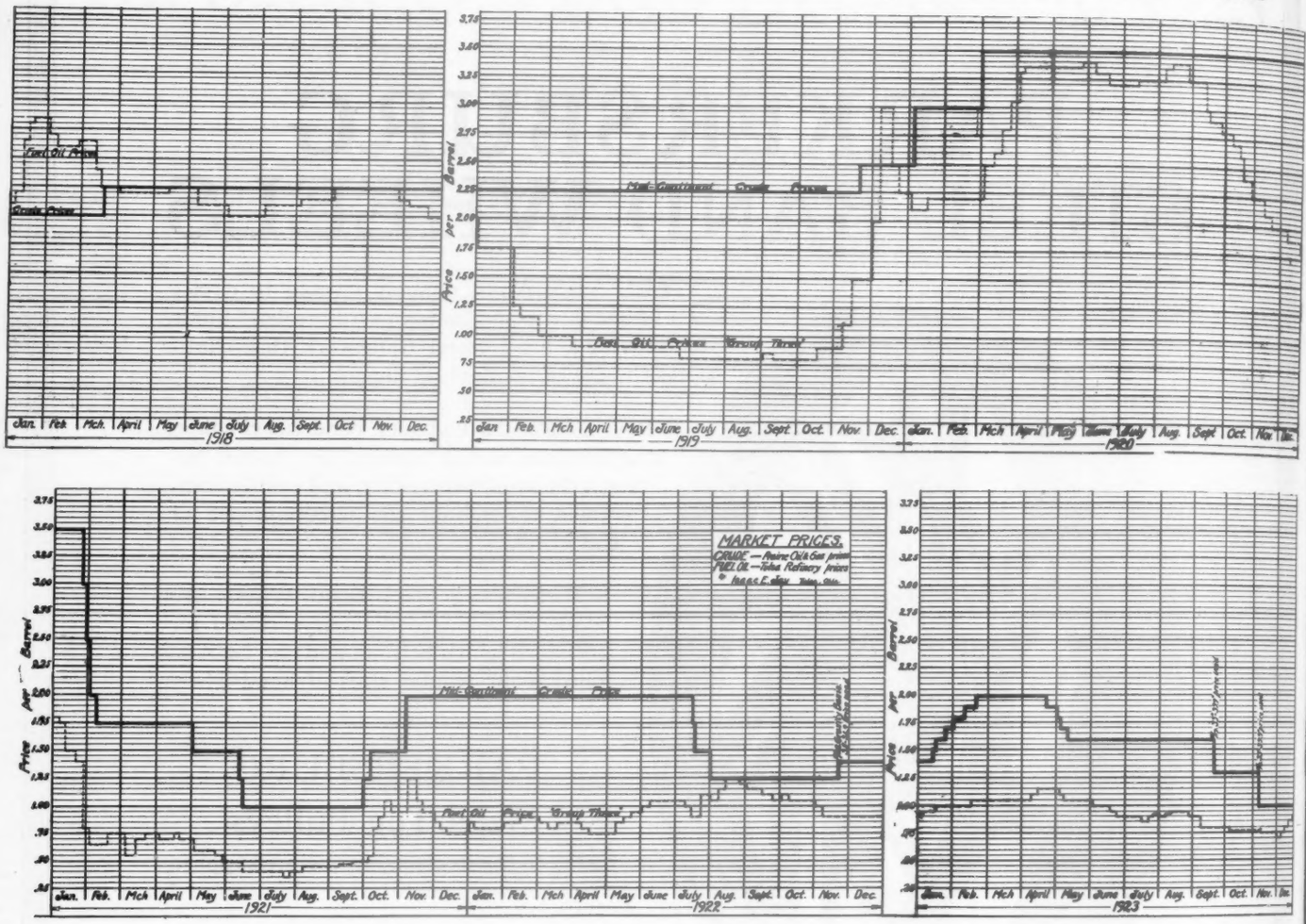
Crude Petroleum and Fuel Oil Prices Covering a Period of Six Years



Date	Price Crude	Price Fuel Oil
1918—		
January 1	$2.00	$2.10
January 5	....	2.20
January 10	....	2.65
January 15	....	2.80
January 20	....	2.85
February 4	....	2.70
February 10	....	2.60
February 25	....	2.65
March 12	....	2.40
March 17	....	2.25
March 19	2.25	....
April 2	....	2.20
May 14	....	2.25
June 8	....	2.10
July 4	....	2.00
August 5	....	2.10
September 4	....	2.15
October 3	....	2.25
November 25	....	2.15
December 5	....	2.10
December 20	....	2.00
1919—		
January 2	....	1.75
February 3	....	1.25
February 9	....	1.15
February 20	....	1.00
March 21	....	.90
June 21	....	.80
September 2	....	.85
September 12	....	.80
October 17	....	.90
November 8	....	1.10
November 15	....	1.50
November 20	2.50	....
December 2	....	2.00
December 8	....	3.00
December 16	....	2.50
December 21	....	2.25
1920—		
January 2	....	2.10
January 6	3.00	....
January 16	....	2.20
March 1	3.50	....
March 3	....	2.50
March 12	....	2.60
March 18	....	2.80
March 26	....	3.05
April 3	....	3.30
April 6	....	3.35
May 25	....	3.40
June 7	....	3.30
June 20	....	3.20
July 14	....	3.25
August 6	....	3.35
August 14	....	3.40
August 27	....	3.25
September 13	....	3.00
September 16	....	2.90
September 27	....	2.80
October 8	....	2.70
October 15	....	2.60
October 18	....	2.40
October 28	....	2.25
November 12	....	2.10
November 18	....	2.00
December 10	....	1.90
December 29	....	1.80
1921—		
January 6	....	1.75
January 12	....	1.50
January 20	....	1.40
January 24	3.00	....
January 28	....	.80
January 31	2.50	....
February 4	2.00	.65
February 9	1.75	....
February 19	....	.75
March 4	....	.55
March 14	....	.70
March 21	....	.75
April 2	....	.70
April 16	....	.75
April 20	....	.70
May 2	1.50	....
May 3	....	.60
May 21	....	.55
May 28	....	.50
June 13	1.25	....
June 16	1.00	.40
July 20	....	.35
July 26	....	.40
August 6	....	.45
September 10	....	.47½
September 21	....	.50
October 1	1.25	....
October 6	....	.55
October 7	1.50	....
October 10	....	.80
October 15	....	.90
October 19	....	1.05
October 24	....	.95
November 7	2.00	....
November 8	....	1.25
November 16	....	1.05
November 20	....	.95
December 1	....	.85
December 5	....	.80
December 12	....	.75
1922—		
January 1	....	.85
January 5	....	.80
February 1	....	.85
February 14	....	.90
March 2	....	.85
March 10	....	.80
March 16	....	.85
April 9	....	.80
April 15	....	.75
May 9	....	.85
May 15	....	.90
May 20	....	.95
June 1	....	1.00
June 9	....	1.05
July 8	....	1.00
July 15	1.75	.90
July 18	1.50	....
July 22	....	1.10
August 2	1.25	1.05
August 7	....	1.15
August 14	....	1.25
August 25	....	1.20
September 1	....	1.15
September 15	....	1.10
September 24	....	1.05
October 1	....	1.10
October 10	....	1.05
November 1	....	1.00
November 8	....	.90
November 22 (35°-36.9)	1.40	....
1923—		
January 5	....	.95
January 13	1.50	....
January 17	1.60	1.00
January 27	1.70	....
February 2	1.80	....
February 10	1.90	....
February 15	....	1.05
February 17	2.00	....
April 8	....	1.10
April 14	....	1.15
April 23	1.90	....
May 2	1.80	....
May 3	....	1.10
May 5	1.70	1.00
May 12	1.60	....
June 2	....	1.00
June 19	....	.90
June 24	....	.80
July 15	....	.85
July 21	....	.90
July 26	....	.92½
August 1	....	.90
August 6	....	.87½
August 13	....	.85
August 27	....	.80
September 9	....	.80
September 19	1.30	....
October 5	....	.77½
November 8	1.00	....
November 10	....	.75
December 1	....	.70
December 7	....	.75
December 14	....	.80
December 21	....	.85
December 29	....	.90

49 FILLING STATIONS ON K. C. BOULEVARDS

KANSAS CITY, Mo., Jan. 28.—"It looks as though you were determined to clutter up the boulevards of Kansas City with gasoline filling stations. The people who paid for them did not build them to be commercialized in this manner."

That was the expression of W. C. Scarritt, president of the park board, when an application for the fiftieth boulevard filling station in the city was submitted to the board. An ordinance had passed the council granting permission to the Standard Oil Co. to locate a filing station at the southeast corner of Independence and Benton boulevards. Before it can be located permission must be obtained from the park board to cut driveways from the boulevards through the parkways. It was this application which was before the board, and property owners and residents were before the board protesting. The board took the matter under advisement.

The records of the board show there now exist 49 gasoline filling stations and 11 gasoline pumps in front of garages on boulevards.

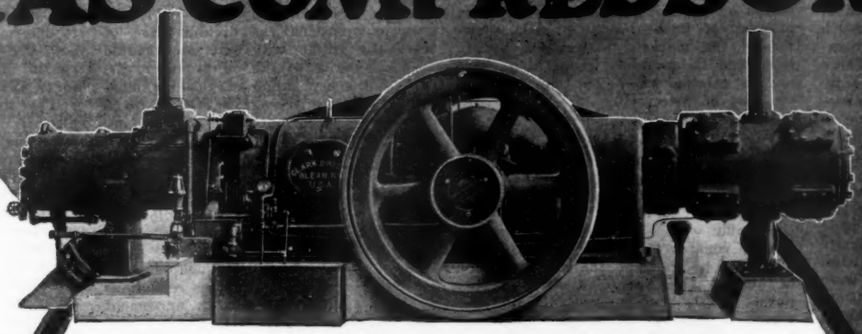
OIL TANKS TO BE BUILT

A Spanish company has completed the erection of tanks having a capacity of approximately 11,000 tons of fuel oil and will commence work on another to contain 5,000 tons in the near future. The company handles considerable stocks of lubricating oil in addition to the Diesel fuel oil supply.

CLARK

~~DIRECT DRIVEN~~ →

GAS COMPRESSORS



More Power—Greater Capacity

There is more power in a CLARK DIRECT DRIVEN GAS COMPRESSOR than in any other ever offered.

One of the prime reasons for this is that in a CLARK the air intake is so located that preheating of the charge is reduced to a minimum.

Then, too, the exhaust is greatly oversize—10 inches—which allows freer scavaging.

Friction and loss of power is eliminated by the direct transmission of the power impulse to the compressor cylinder without extra crossheads or connecting rods, as in other types.

The Clark Compressor is a better value in dollars and cents because with its greater power it has more capacity per unit.

Complete bulletins sent on request

CLARK BROTHERS COMPANY
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Manufacturers of Gas Compressors and Drilling Engines

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Gasoline Taxes Show Motor Consumption

Automotive Vehicles Consume 90 Per Cent of Product; 25 Per Cent Increase in Total, 5,404,184,000 Gallons, in 1923

By Charles E. Kern

WASHINGTON, D. C., Jan. 28.—In the year 1923, 5,404,184,000 gallons of gasoline were consumed by motor vehicles, according to the estimate made by the National Automobile Chamber of Commerce. The importance to the oil industry of this figure is the fact that it represents a consumption of gasoline about 25 per cent greater than the estimate for 1922 when the quantity consumed was 4,306,003,341 gallons.

Students of the motor vehicle industry believe the increase in this kind of transportation in 1924 will be as much in excess of 1923 as that year was in excess of the previous 12 months. There is only optimism in the automobile industry and it is believed that a reasonable increase in the price of gasoline to permit a living profit for oil producers and refiners will have no effect as an obstacle to motor transportation.

After the States began taxing gasoline for purposes of raising revenue the collection of revenue from this source made possible a much more accurate estimate of gasoline consumed by motor vehicles. Previous to that the estimates were made upon rather vague information. Up to this time 36 States have enacted or are in the course of enacting a gasoline tax and the result of statistics showing revenues collected has made possible much more exact estimates. These reliable data have caused a correction in the estimates of gasoline consumption by the motor vehicle industry so that it is now believed about 90 per cent of all the gasoline produced is used in that way instead of 80 per cent, as calculated in the past, and upon which the figures shown in the foregoing were predicated.

Tax on Oil Industry

The tax on gasoline, which is clearly another tax on the petroleum industry, will raise an immense fund for road improvement for which purpose it is supposed to be devoted. Owing to the manner of its collection, which does not require any expensive machinery for supervision, nearly all the money gained in this way goes into the treasuries of the several States to remain there until it is checked out for road improvement. Prior to January, 1923, there was very little taxation of gasoline sales by the several States. However, on July 1, 1923, there had been collected a total of $8,669,174 in gasoline tax in all of the States in which the tax was in effect, for the first six months of the year. The last six months will show receipts greatly in excess of the first half of the year because many of the gasoline tax laws did not go into effect until the beginning of the fiscal year and because of the greater consumption during the latter part of the summer and in the autumn months. At this time, based upon the present use of motor vehicles and including only the States that now collect the tax, it may safely be estimated that during 1924 the gasoline tax will amount to between $25,000,000 and $30,000,000. If the well founded optimism of the industry in respect to the increase in the number of cars and trucks to be manufactured and sold is realized in 1924 the revenues of the States from this source will be very much in excess of these figures, which will be further inflated when the tax is adopted by more commonwealths. Up to this time only a few of them have taken a definite stand against this kind of taxation.

Low Price Invited Tax

One of the conditions that have contributed to make State Legislatures favorably inclined toward proposals for a tax on gasoline during the past year has been its phenomenally low price. In fact, gasoline was so cheap that its subnormal price suggested it was a very fit subject for taxation. What may be the attitude of the public toward the tax when gasoline sells at a figure that will compensate the oil industry is now a matter of conjecture but unfortunately it is bound to add to public clamor against the oil industry with readjustment in the price. At that time the oil industry will fully realize that the gasoline tax is a tax placed on its shoulders because with the passing of flush production that has flooded the markets with cheap petroleum and its products of all kinds, the day is coming when the time honored measure of price, what the traffic will bear, must make its influence felt.

Perhaps no expression of a commercial truism has been more roundly denounced by the unthinking who have sought to infer the influence of a grinding monopoly, than has the phrase "what the traffic will bear." In the ordinary lines of commercial transactions the manufacturer places upon the market goods of quality and price suitable to the purses of the purchasers it is contemplated will accept them. In that way he solves the difficult problem of "what the traffic will bear." Expensive and cheap goods are distributed according to the purchasing power of various communities.

In the case of gasoline, however, there is only one standard for everybody and with the increase of producing costs brought about by less production per well and deeper drilling, the time will come, in the opinion of men who have the interest of both the public and the oil industry at heart, when the price of gasoline must be influenced by the cost of transportation by motor vehicles. That cost is now so low per mile per ton or per passenger that it is useless to make careful comparisons. It is simply dirt cheap compared with any other form of transportation. When it begins to approach the dividing line of what the traffic will bear and should bear in justice to the oil producer, the fact that every gallon of gasoline must pay into State treasuries from 1 to 3 cents will be a matter of serious importance to the industry.

In assessing a tax on gasoline only three States have shown a disposition to lower their license registration charges. They are California, which has lowered the license registration for passenger cars to $3; Utah, which has made a decrease of 50 per cent in such charges, and Maryland, which proposes reductions as soon as it can reach an agreement with Congress by which that State contemplates allowing cars owned and licensed in the District of Columbia to be operated in Maryland provided gasoline is taxed in the District of Columbia. Maryland was one of the first commonwealths to adopt the gasoline tax and it found that with untaxed gasoline in the District of Columbia its sales were curtailed. Now by offering recognition of District licenses it is inducing Congress to tax gasoline here so that purchasers cannot escape the tax by filling up before they enter that State.

Eleven States May Add Tax

In addition to the 36 States which have or are about to enforce a gasoline tax, 11 legislatures that will meet this year will take up propositions for providing revenue in that way. Massachusetts is to have a State referendum to determine what it will do and Minnesota also will vote on this question. Wisconsin, Michigan and Iowa have voted for a gas tax.

The situation in the 32 States that already tax gasoline is shown in the following compilation:

Alabama: Gasoline tax now 2 cents per gallon, collected from the distributor, all funds going to counties for roads.

Arizona: Tax increased to 3 cents.

Arkansas: Tax 1 cent and was increased by legislature to 3 cents, but the Governor vetoed the bill.

California: Tax 2 cents beginning September 30, 1923, of which one-half goes to counties in proportion to the number of automobiles, and one-half to maintenance of State roads.

Colorado: Tax increased from 1 to 2 cents, which produces additional revenue of about $650,000 per annum, collected from the wholesaler, and is distributed one-half to the highway department and one-half to counties.

Connecticut: Tax 1 cent, which goes to highway department for construction, reconstruction and maintenance of roads.

Delaware: Tax 1 cent in 1923 and 2 cents in 1924, collected from wholesaler, and goes to construction and maintenance of roads.

Florida: Tax increased from 1 to 3 cents.

For Georgia Rail Bonds

Georgia: One cent of tax goes to counties for road construction and 1 cent to State to match Federal aid for road building and 1 cent to retire railroad bonds owed by the State; after the retirement of these bonds the act provides that this 1 cent of the tax shall be added to highway department. The tax is collected from distributors.

Idaho: Tax of 2 cents is collected from companies bringing the gasoline into the State.

Indiana: Tax of 2 cents collected by auditor of the State, first year the counties to get $500,000 and after first year counties to get $1,000,000 annually.

Maine: One cent tax, of which one-half is for town roads and one-half for maintenance of State and State aid highways and bridges.

Massachusetts: Tax of 2 cents, subject to submission to State referendum.

Montana: Two-cent tax, an increase of 1 cent. Of the amount collected 20 per cent goes to the State highway fund, 40 per cent to counties to be used for maintenance of roads and 40 per cent to State general fund.

Nevada: Two-cent tax collected from the importer of which $60,000 goes to the highway department and the remainder to the counties proportioned according to the car registration.

New Hampshire: One-cent tax for 1923 and 2-cent tax thereafter, all going to the State for public roads.

New Mexico: One-cent tax, of which 5 per cent is allowed for collection and 95 per cent for road construction.

North Carolina: Tax increased from 1 to 3 cents, which is used to pay in-

(Continued on Page 160)

MINE BUREAU TESTS SHOW WAY OF USING NATURAL GAS HEATERS

Warning of the danger of asphyxiation by carbon monoxide fumes escaping from improperly working natural gas heaters is given by the Department of the Interior, following a series of tests made at the Pittsburgh Experiment Station of the Bureau of Mines. Every year a great many people are killed by breathing carbon monoxide given off by some type of heater used in homes, the department points out. As a safety measure, a heater should not be allowed to burn in a closed room in which persons sleep at night, especially if the heater burns much gas and has no flue, unless one or more windows are open to supply plenty of fresh air.

Carbon monoxide is odorless, colorless and tasteless, and can not be detected by any of the senses. It is so noxious that continued exposure to two-tenths of 1 per cent of it will cause unconsciousness and death; and its effect is so insidious that a man breathing it may have little or no warning before he collapses.

Tests of six common types of natural gas heaters were made by the Bureau of Mines in a closed room of the Pittsburgh Experiment Station, having 1,000 feet capacity. This room, which was designed for permanent use in the study of a great variety of gases, is constructed of sheet iron and glass. The heaters were tested just as supplied by the manufacturer, without any adjustment. The gas used was burned at different rates of flow or consumption, and each heater was allowed to burn until the flames were extinguished by the lack of oxygen in the room. During each test the room atmosphere was sampled frequently and the samples were analyzed for carbon monoxide, carbon dioxide, oxygen, methane and hydrogen.

In the majority of the tests not enough carbon monoxide was liberated to cause any alarm as to the use of natural gas heaters or to necessitate any radical changes in their operation. Only under abnormal conditions, caused by faulty construction, excessive gas flow, or improper adjustments of the burner, did the carbon monoxide become dangerous. The bureau's findings are summarized as follows in Technical Paper 337, just issued:

The quantity of carbon monoxide that accumulated in a closed room of 1,000 feet capacity, when natural gas heaters were burned until the flames were extinguished, ranged from zero to the exceedingly dangerous concentration of 1.72 per cent.

Faults to Avoid

In general, the liberation of carbon monoxide by natural gas heaters may be due to one or more of several causes. Such as supplying the heaters with too much gas; not supplying the flame with air enough for complete combustion; faulty construction of the heaters; or allowing the flame to impinge on metal or other surfaces so that it is chilled below the ignition point.

As the proportion of oxygen in the air supplied the heater diminishes, the rate of liberation of carbon monoxide remains fairly constant until the oxygen content nears the point at which the flames are extinguished, then the rate of liberation rapidly increases.

A free burning flame—whether luminous, blue or nonluminous—if supplied with an ample quantity of oxygen does not produce appreciable quantities of carbon monoxide. A "free burning flame" is one that does not burn in contact with metal or other surfaces.

Lava-tip, yellow-flame heaters burning

(Continued on Page 160)

Why One Company Bought 36 CP Compressors

WHY were the *thirty-six* Chicago Pneumatic Oil Engine-Driven Air Compressors illustrated bought by *one* company?

First, because these compressors *burn low-cost fuel oils*—plentiful and easily obtained.

Second, because they are *simple*. No valves to grind. No cams, camshafts, electrical firing devices or other complicated mechanisms. Compressor and engine are unitized. No belt or gear power losses. Single cylinder economizes fuel and lowers upkeep expense.

Third, because they are *rugged*. They withstand rough haulage and exposure.

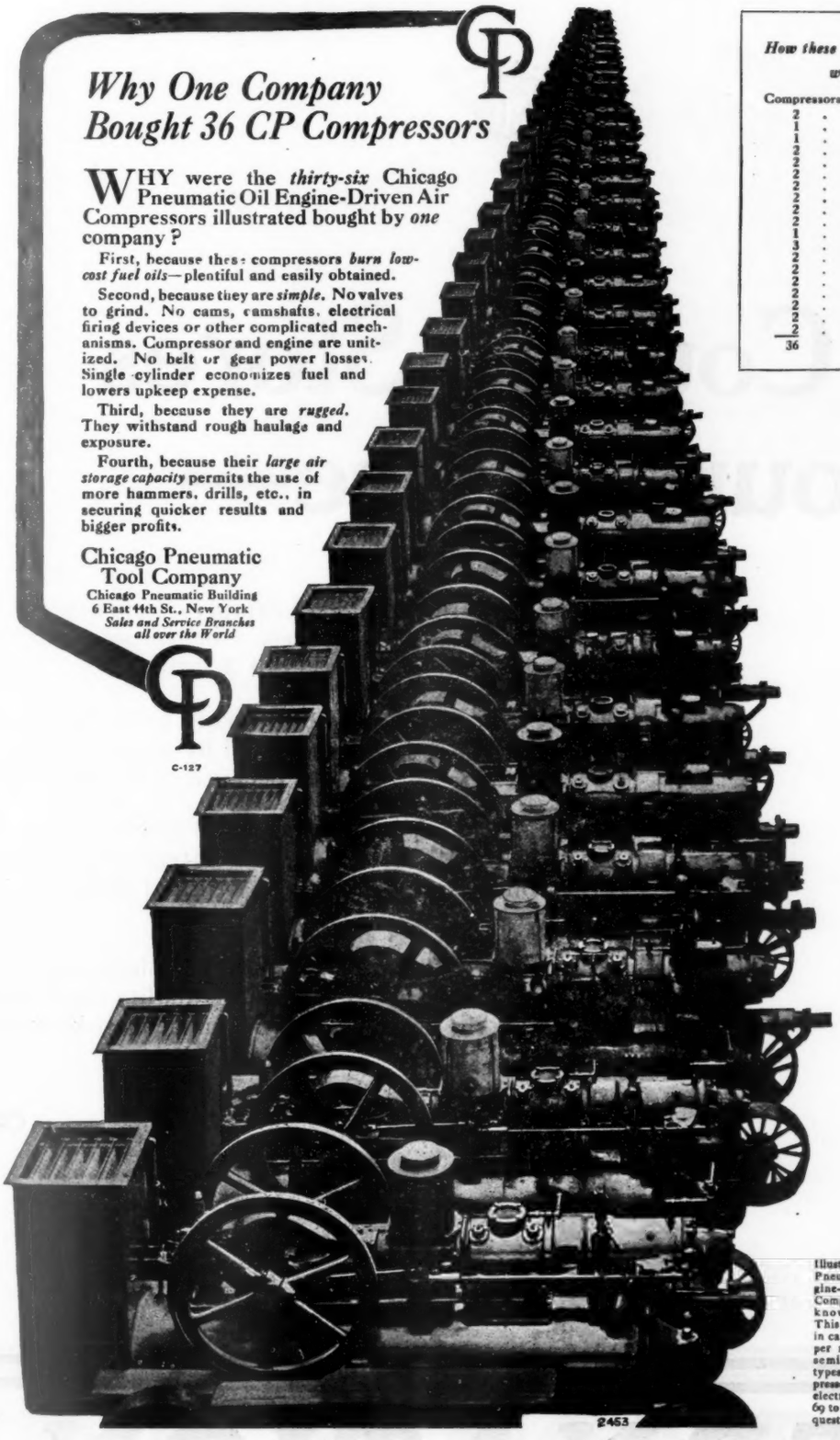
Fourth, because their *large air storage capacity* permits the use of more hammers, drills, etc., in securing quicker results and bigger profits.

Chicago Pneumatic Tool Company
Chicago Pneumatic Building
6 East 44th St., New York
Sales and Service Branches all over the World

C-127

How these 36 CP Compressors were bought

Compressors	Date Bought
2	2-22-15
1	5-26-15
1	9-25-15
2	11- 4-15
2	11- 5-15
2	6-17-16
2	9-29-19
2	10-15-19
2	10-31-19
2	11-17-19
1	12- 4-19
3	12-11-19
2	12-13-19
2	1- 6-22
2	2-23-22
2	3- 1-22
2	3- 4-22
2	3- 8-22
2	3-13-22
36	



2453

Illustrated are thirty-six Chicago Pneumatic Class N-502 Oil Engine-Driven Tank-Mounted Air Compressors used by a nationally-known contracting company. This type CP Compressor is built in capacities of 144 and 212 cu. ft. per minute. Also, furnished in semi-portable and stationary types. Other CP Portable Compressors include oil, gasoline and electric-driven types, capacities, 69 to 534 cu. ft. per minute. Request bulletins.

23 Oil Country Stores At Your Service—

The International Supply Company now operates 23 large and completely stocked stores covering thoroughly the oil districts of 3 states.

The policy of the company is to handle only equipment which has been tested by years of field service and has earned preference because of its superiority.

With our main offices and works in the heart of the Mid-Continent we are strategically located to give prompt service, both on original deliveries and on replacements.

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SUPPLY COMPANY

Amendment Would Affect Producers

Proposed Change in Collection of Oklahoma Gross Production Tax Might Force Double Payments

By James McIntyre

A proposed amendment to the gross production tax law has been introduced in the Oklahoma State Legislature and is now before the joint survey committee of the House and Senate. The amendment provides a new method for the collection of the gross production tax, putting the burden of the collection and payment of the tax on the individuals or companies buying oil and gas from producers. The amendment puts a great responsibility on the purchasers of oil, but it affects the producer so seriously that every Oklahoma oil man should endeavor to have it killed in committee.

The proposed amendment, if adopted, would make it necessary for every person, firm, association or corporation desiring to engage in the business of purchasing oil and gas, before entering on such business, to make application for a license or permit to do so with the State Auditor. The application shall be upon oath and state the business in which the applicant desires to engage, the county in which the operations are to be carried on, and the applicant must agree to comply with the provisions of the act and pay the gross production tax as provided in the law. Such purchaser must make quarterly returns of the amount of oil and gas purchased and deduct the amount of tax from the purchase price of the commodity and the proposed amendment states that he must consent that such tax shall constitute a lien upon each unit of production until it is paid into the State Treasury. The act also provides for a penalty of 25 per cent added to the amount of tax for failing to file each quarter annual report as provided in the act. The act also provides for a report in substance as now required by the producer and also makes the tax and lien on the property of the producer. The copy of the proposed amendment contains many crudities like that above mentioned, where the purchaser must consent that the tax levied should constitute a lien on the unit of production. It was taken to mean units used in the business of purchasing. There are other crudities about the bill, among which may be mentioned the following: Purchasing ores bearing mineral oil and natural gas. It is assumed that the crudities appearing in the bill are either owing to errors in the copy furnished or will be ironed out in committee before the bill is reported to the Legislature, and, therefore, may be disregarded.

Why Is It Necessary

Disregarding these crudities, and considering the bill on its merits, the first question that arises is, why its necessity? Oklahoma has a gross production tax law now with which the oil business is entirely familiar, under which the business has been conducted for a number of year, and operations under the present law have been entirely satisfactory. The present law requires from the purchaser and producer all the information that will be given under the proposed amendment. The only reasons that can be advanced for the enactment of the proposed amendment are that it will reduce the expenses of the State in the collection of the tax, or add to revenue of the State by collecting taxes that are not collected under the existing law. Under the proposed amendment, as under the existing law, it will be necessary for the State Auditor's office to check the returns of the purchasers and the returns of the producers one against the other in order to determine whether the State receives payment for all the taxes due. Therefore, the adoption of the amendment cannot result in the reduction of the expense of collecting the tax.

Under the existing law, as under the proposed amendment, the State has a lien on the producing unit for the amount of the tax and, therefore, the proposed law gives the State no greater security than it now has. As to the collection of the tax, the existing law provides that it shall be paid by the producers. The proposed amendment provides in some instances it is paid by the purchasers and in other instances is paid by the producers. Just how this will result in the State collecting more money or in a more efficient collection it is difficult to see. The introduction of additional persons liable to pay the tax, a division of the duty of payment, cannot result in efficiency and must make evasion of the tax more easy and its evasion more difficult to determine and thereby increase the expense of the State Auditor's office in administering the law. Under the law as it now exists, the State can only fail to collect the full amount of the tax where the producer sells oil or gas by the failure of both producer and purchaser to make reports and the producer failing to remit the tax, or where the producer uses his own production and does not report, or where correct reports are made by both producer and purchaser, the producer does not remit the tax. An error in the last instance can be corrected and avoided by the State Auditor's office checking the reports of the purchaser and producer against each other and requiring payment by the producer of the correct amount of the tax. The proposed amendment would not do away with this necessity, and does not eliminate the other sources of possible loss.

Under the existing law the State can only lose its tax in three ways:

(a) Where the producer uses his own oil and fails to make the report required by law and remit the tax due. The proposed amendment would not eliminate this danger of loss.

(b) Where both producer and purchaser fail to make the reports required and the producer fails to remit the tax. The proposed amendment would not eliminate this contingency.

(c) Where the purchaser and producer make correct reports and the producer fails to remit the tax, or remits it only in part, and the Auditor's office, by failure to check the reports against each other, fails to detect the error or delinquency. The proposed amendment does not prevent loss from this source.

In addition to these, of course, there is another possibility of loss and that is the producer becoming insolvent between the time he sells his oil and receives the purchase price of it and the time the tax is due, and the property owned by him is not sufficient to pay the amount of the taxes due the State. The proposed amendment does not and cannot eliminate the possibility of insolvency. Therefore, there does not appear to be any apparent necessity for the amendment of the existing law. The existing law is the easiest, simplest, and most efficient and economical method of collecting the tax and, eliminating the question of insolvency, the State cannot lose any tax except where oil is sold by a producer, collusion between both the purchaser and the producer, or a failure in the State Auditor's office to check the reports of producer and purchaser against each other, or where a producer consuming his own oil fails to comply with the law. Can a different system of collection eliminate these sources of possible loss? It is difficult to see how these dangers could be eliminated and it is certain that such dangers are increased instead of lessened by the proposed amendment.

Why Change a Good System?

A simple and efficient system of collecting taxes with which the people are familiar, should only be changed for most substantial grounds. It does not appear that any such ground exists, calling for a change in the gross production law. The proposed amendment places the burden upon purchasers of oil of deducting the tax and paying the tax. This addition to the expenses of purchaser will constitute a considerable burden on the business. This is, however, perhaps the smallest objection to the measure. The increased burden of collection and making reports on behalf of the purchasers could be absorbed in the business and reflected in the price of oil. It is from the standpoint of the producer that the bill is most obnoxious. A producer, under the proposed law, sells parts of his oil to, we will say, three purchasers. Each of these purchasers are required by law to deduct the tax due, yet the producer is not relieved from the responsibility for the tax. The tax is declared to be a lien on his property and, in the event the purchasers do not remit the tax, the producer is liable to the State for the amount of the tax and perhaps liable for penalties; thus making him underwrite and be responsible for not only the solvency of the persons to whom he sells oil, but for their failure when solvent to comply with the provisions of the law. Thus the producer, under the bill, may be twice liable for the amount of his tax and with no method of protecting himself. Again, the proposed bill increases the chances of loss by the State and the difficulties of the producer. If the producer sells oil to a purchaser on which the tax has already been paid, how is he to show the purchaser such fact? The purchaser, in order to protect himself, will deduct the tax. Oil, unlike bales of cotton, cannot be identified as particular oil on which the tax has been paid, and how could a purchaser, purchasing and running oil from a particular tank, know whether the tax on the oil in that tank had been paid? Not knowing and having no means of knowing whether the tax on the oil had been paid, the purchaser would of necessity, in order to protect himself, deduct the tax from the sale price and return it into the State Auditor's office and the producer would have to make application for a refund in some manner of the tax. And how would he ever be able to show the State Auditor that the particular oil sold to a particular purchaser was oil on which the gross production tax had been paid before it was sold to the purchaser? And if he could succeed in this, the proposed bill provides no method of procedure by which he could recover the tax.

Producer Would Pay Twice

There are many purchasers of oil in Oklahoma, outside of the pipe line companies, or companies connected with pipe line companies, many of whom are not

(Continued on Page 170)

OIL INDUSTRY'S 1923 CONSUMPTION OF STEEL REACHED ALMOST A RECORD

By B. E. V. Luty

PITTSBURGH, Pa., Jan. 28.—Consumption of steel by the oil industry in 1923 was nearly if not quite the largest in the history of the industry. A precise statement cannot be made because statistics of tubular goods production in the year have not yet been gathered, while no record is ever kept of production of oil storage tanks and the use of steel in other ways in the oil industry.

In recent years some compilations have been made of "where the steel goes," i e., into railroads, automobiles, etc., but these compilations are somewhat confusing, and they are quite useless to the oil industry, for they carry one general category, "oil, gas and water." It is proverbial that oil and water do not mix, an dthe steel for these liquids ought not to be mixed either.

As a basis for comparison, production of statistics of the pipe mills are given below for previous years. The collection of these figures was begun in 1913. The figures refer to gross tons. In the first column is given the classification known as "oil country goods" and including line pipe, casing, tubing, etc. The second column gives the total production of welded tubular goods, including besides the "oil country goods" of the first column the production of black and galvanized merchant pipe, boiler and O. D. and miscellaneous pipe. A little merchant pipeis, of course, used in the oil fields.

Pipe Mill Production—Gross Tons

	(Oil country goods.	All welded tubular.)
1913	841,089	2,047,532
1914	619,291	1,737,704
1915	602,920	1,919,674
1916	940,431	2,[illegible],[illegible]8
1917	887,903	2,486,977
1918	794,769	2,290,479
1919	1,068,914	2,374,931
1920	1,261,778	3,002,725
1921	891,995	1,987,442
1922	1,139,834	2,732,236

A rough estimate in the trade is that in the past five years nearly if not quite 50 per cent of the oil country tubular goods produced was in line pipe. It is thought that production of line pipe in 1923 was by a considerable margin the greatest in history. The Sinclair line pipe order was the largest single line pipe order on record. It was not until the last two or three months of the year that the mills began running out of pipe orders. Production of tubing and casing was not so great as in 1922 or 1920. Of all oil country goods production was probably between 1,000,000 tons and and 1,250,000 tons, i. e., less than in 1920, but more than in any year outside of 1919, 1920 and 1922.

On account of the large excess of oil production over consumption there was much building of steel storage tanks in 1923, except for the last two or three months of the year, certainly much more than in any preceding year. Consumption of steel in this direction was so heavy that it probably made up for any deficiency there was in casing and tubing from the previous record year in tubular goods, 1920.

Casing and Tubing

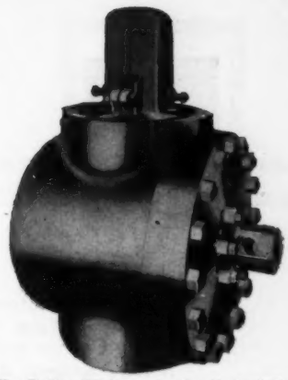
Demand for casing and tubing was very heavy in the early months of 1923, and it did not decrease in the spring and early summer nearly as much as might have been expected from the excessive production of oil. While the oil trade was full of talk that production would have to be restricted the pipe mills were still receiving good orders. Finally, in the last three or four months of the year buying of casing and tubing became light, but even that was doubtless due in part to the season of the year.

The pipe mills operated at about 85

(Continued on Page 170)

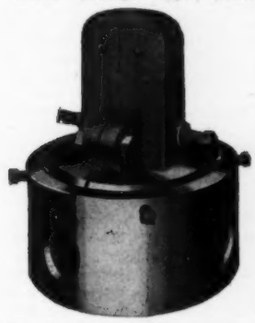
Standard Equipment

No. 1. The Roller Oil Saver in the Control Casing Head (Screwed Type) is of greatest value during the drilling-in, or swabbing operations of large wells. They can be placed without interference to the drilling operations or flow of the well. Gas in large quantities spraying oil from an open casing head is a menace and is overcome with this combination. The well's production is delivered to the tanks without loss.



(1) The Roller Oil Saver in the Control Casing Head. (Straight Type.) (Patented.)

No. 2. The Common Casing Head (Berry Type) either two-way or four-way, in which is placed the Roller Oil Saver is the ideal combination for average size wells. Drilling-in operations can be completed without loss of oil or gas as any flow taking place is discharged through the lead lines to tankage. After the completion of the well, the Roller Oil Saver can be removed, the tubing run in and the casing head top set. The well can then be pumped.

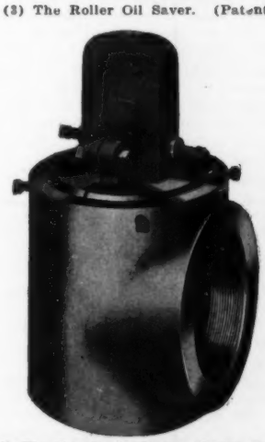


(2) The Common Casing Head (Berry Type.)

No. 3. The Roller Oil Saver was designed primarily to conserve oil or gas during the drilling-in, or swabbing operation, so that they would not escape as is the case from an open casing head. It consists of two pieces of special rubber compound fitting closely to the drilling line and adjusted from the side by set screws, thus taking up any reasonable wear without increasing the effiective packing contact on the line. It is made to fit the different sizes of Control and Common Casing Heads or Tee Casing Heads.

(3) The Roller Oil Saver. (Patented.)

No. 4. The Tee Casing Head (Berry Type) with Roller Oil Saver is used on wells with a flow of oil without gas. Drilling-in operations are carried to the tanks.



(4) The Tee Casing Head (Berry Type..)

No. 5. The Flange Type of Control Casing Head is made in all sizes from 5 3/16 inch to 12½ inches. It can be applied quickly. Value saved by using this equipment will more than pay its cost. But 4 parts make up this Control Head.

(5) The Flange Type of Control Casing Head. (Patented.)

THE OIL WELL IMPROVEMENTS CO.
Tulsa, Okla.

Oklahoma Field Operations

By C. D. Lockwood

Burbank operators remove restrictions on remaining inside locations, due to disappointing showing and to announcement of Osage lease sale; Osage County well gauges 600 bbls. in five hours, opening new area; Oklahoma's deepest drilling well abandoned; Tonkawa and Wewoka decline.

The fears of those who saw in the abrogation of the Burbank shutdown agreement a menace to the recovery of the oil situation in the Mid-Continent do not seem to be justified as wells in that area continue to reach the producing horizon. Such, in fact, has been the disappointment in the size of the wells recently brought in there and in the manner in which they hold up that a proposal to remove all further restrictions on the remaining four inside locations on each quarter section met with immediate approval Monday morning and the famous "gentleman's agreement" became history. Operators were free to begin drilling immediately on any location in the Burbank Field or its extension in Kay County.

Another influence affecting the decision of the committee was the announcement of the Osage lease sale to be held March 18 and 19 when 100,000 acres will be placed on the market.

Old Osage County has again sprung a surprise in the nature of a well that actually gauged 600 bbls. of oil in five hours. It was drilled by the Atlantic Oil Producing Co. near Pawhuska in the CSL SW, Section 27-25-8, a section that had previously produced nothing but some shallow gassers. Due to the fact that water rather than oil was expected by the drillers, the pay was struck at 2,696 feet with no control head on the pipe and a large amount of oil was wasted before it was brought under control and partially shut in. The Prairie Pipe Line Co. and the Cosden Pipe Line Co. both laid lines to the well, and a 1,000-bbl. tank was built.

Good Well in Creek County

A good Creek County producer was brought in by the Phillips Petroleum Co. in its No. 4 Tiger, NW cor. SW, Section 4-15-9, which started at the rate of 75 bbls. an hour from the Dutcher sand at 2,914-16 feet.

Papoose Oil Co.'s No. 1 Simon, SE cor. SW, Section 4-9-9, which opened up new territory in that section last year, was drilled three feet deeper to a total depth of 3,322 feet and gauged 427 bbls. in 24 hours. It was making about 125 bbls. before being deepened.

Oklahoma's deepest drilling well has at last been listed in the completion column. It was the Kingwood Oil Co.'s No. 1 Barnett, NW cor. NE SW, Section 7-7-10, and went down one foot more than a mile where it encountered water and was abandoned.

C. H. Lebo's No. 1 Wind, SE cor. SW SW, Section 6-10-10, which was completed in September for 75 bbls., has been deepened 3 feet and its production increased to 130 bbls. Total depth is now 3,007 feet.

A small showing of oil was found in Hughes County by the Flesher Petroleum Co. in its No. 1 Smith, NW cor. NE NW, Section 8-9-12. Sand was reached at 3,445-52 feet and it was drilling ahead.

The Wolverine Oil Co.'s gasser in the Hewitt Field, No. 111 Dillard, NW cor. SW, Section 22-4s-2w, which blew in last week as a 26,270,000-foot gasser in sand at 2,780 feet just touched, drilled itself in and started spraying oil, making 150 bbls. in 12 hours after it was connected. It strengthens hopes for a southeasterly extension of the deep pay.

The Tonkawa and Wewoka Fields both registered declines in production again this week, while Burbank gained 16,234 bbls. in daily average production from 19 additional wells. The Burbank production for the week ending January 23 was 86,980 bbls. daily from 1,153 wells. The Tonkawa production for the same period was 39,887 bbls. from 619 wells, a decrease of 2,512 bbls. in spite of the addition of three new producers. Wewoka's decline was less, amounting to only 975 bbls., the figures for the week in that pool having been 9,641 bbls. daily from 27 wells, the same number of producers as the week before.

Total operations throughout the State made another big gain, reaching 1,398 for the week ended January 19, in comparison with 1,314 for the previous week. This increase was distribtued all along the line, except for shutdown wells which decreased 36. Compared with the week before locations increased from 72 to 88; rigs, from 211 to 247; drilling wells, from 594 to 653, and completions, from 32 to 41.

In the Burbank Field

In the Burbank, the Mid-Kansas Oil & Gas Co.'s No. 10, SE cor. Section 15-27-5, Osage County, was good for 1,100 bbls. from sand topped at 3,031 feet. First oil came at 3,062 feet and the first flow at 3,072 feet. Total depth was 3,113 feet. The Sinclair Oil & Gas Co.'s No. 2, in the NE of Section 15-27-5, was shot for the third time with 20 quarts in sand at 2,995-3,022 feet and increased to 460 bbls. The Gypsy Oil Co.'s No. 1, SW cor. NE, Section 10-27-5, was given a 30-quart shot in sand at 2,944-65 feet and made 993 bbls. The Sinclair Oil & Gas Co.'s No. 7, SE cor. NE, Section 15-27-5, was shot with 60 quarts in sand at 3,014-44 feet and increased 200 bbls. to 654 bbls. daily. The Mid-Kansas Oil & Gas Co.'s No. 9, NE cor. SE SE, same section, topped the sand at 3,145 feet and found first oil at 3,150 feet. It was drilling at 3,176 feet and was making 600 bbls. naturally. The Phillips Petroleum Co.'s No. 9, SW cor. NW NW, Section 23-27-5, made 1,600 bbls., after a 120-quart shot in sand at 2,974-3,022 feet. The Skelly Oil Co.'s No. 2, NW cor. NE SW, same section, produced 375 bbls. after a shot of 20 quarts in sand at 3,020-52 feet. The Gypsy Oil Co. was fishing tools at 3,000 feet in its No. 16, NW cor. NE NW, Section 24-27-5. It was good for 750 bbls. from sand topped at 2,962 feet and first oil at 2,964 feet. The Sinclair Oil & Gas Co.'s No. 11, NW cor. NE, Section 19-27-6, was making 200 bbls. after a 200-quart shot in sand at 2,912-60 feet. Top of sand was found at 2,904 feet and first oil at 2,917 feet. Total depth was 2,965 feet. The Gypsy Oil Co.'s No. 10, NE cor. NW, same section, was a 300-bbl. producer after a 150-quart shot in sand at 2,908-62 feet.

In the extension, the Waite Phillips Co. was plugging its No. 1, SE cor. Section 32-28-5, Kay County, at 3,442 feet. The Carter Oil Co.'s No. 1 Pappan, SW cor. NW, Section 3-27-5, was a disappointment, being good for only 160 bbls. in sand at 2,875-2,920 feet; first oil came at 2,882 feet. The Texas Oil Co.'s No. 2 Munroe, NW cor. SW, same section, an offset, found the top of the sand at 2,865-2,902 feet and was making 20 bbls. an hour. The Gypsy Oil Co.'s No. 1, SE cor. SW SE, Section 4-27-5, increased from 250 to 800 bbls. when it was given a 40-quart shot in sand at 2,903-26 feet. The same company's No. 2, NW cor. SE, same section, was good for 30 bbls. an hour in sand at 2,898-2,910 feet, and No. 5, NE cor. SE, same section, was flowing 20 bbls. an hour naturally in sand topped at 2,870 feet. First oil was at 2,885 feet and first flow at 2,901 feet. It was still drilling at 2,912 feet. The Phillips Petroleum Co.'s No. 3, SW cor. NE, Section 9-27-5, was making 1,300 bbls. a day. The Sinclair Oil & Gas Co.'s No. 2, NE cor. SW, Section 9-27-5, made 1,800 bbls. the second 24 hours and increased to 2,500 bbls. at total depth of 2,953 feet. The Phillips Petroleum Co. shot its No. 2, NE cor. SE SE, same section, with 90 quarts, and it made 100 bbls., sand having been shot from 2,971-3,007 feet. The Twin State Oil Co. increased the production in its No. 5, NE cor. SE NW, Section 15-27-5, from 225 bbls. to 350 bbls. by a 12-quart shot in sand at 2,980-3,000 feet. The Comar Oil Co.'s No. 5, SW cor. NW SW, same section, was making 500 bbls. of oil and 15 bbls. of water naturally from sand at 2,964-82 feet. First oil came at 2,980 feet. Dye, Tomlinson and others' No. 7, NW cor. SW SW, same section, was good for 350 bbls. naturally from sand at 3,039-48 feet.

Burbank Production

In the Burbank Field, daily average production for the week ended January 23 was as follows:

Company—	Wells	Bbls.
Carter Oil Co.	168	8,849
Comar Oil Co.	7	267
Cosden Oil & Gas Co.	68	1,535
Devonian Oil Co.	16	409
Gardner Petroleum Co.	20	736
Gypsy Oil Co.	156	13,292
Kewanee Oil & Gas Co.	12	186
Laurel Oil & Gas Co.	16	320
Lorraine Petroleum Co.	15	291
Midland Oil Co.	5	134
Mid-Kansas Oil & Gas Co.	23	2,670
Peters & Oliphant	1	156
Phillips Petroleum Co. and Delmar Oil Co.	3	4,279
Phillips Petroleum Co.	34	6,502
Phillips Petroleum Co. and Skelly Oil Co.	145	7,372
Prairie Oil & Gas Co.	90	2,109
Producers & Refiners Corp.	28	790
Roxana Petroleum Corp.	57	927
Tomlinson and others	29	465
Sinclair Oil & Gas Co.	134	6,874
Skelly Oil Co.	6	1,390
Tidal-Osage Oil Co.	41	1,097
Twin State Oil Co.	8	268
Total	1,082	60,918
Kay County		
George S. Bole	1	1,050
Carter Oil Co.	3	1,596
Comar Oil Co.	9	2,926
Cosden Oil & Gas Co.	3	1,986
Gypsy Oil Co.	7	2,534
Laurel Oil & Gas Co.	1	20
Phillips Petroleum Co.	13	7,192
Mid-Kansas Oil & &Gas Co.	4	1,870
Prairie Oil & Gas Co.	1	450
Pure Oil Co.	1	383
Roxana Petroleum Corp.	1	752
D. Tomlinson and others	6	496
Skelly Oil Co. and Phillips Petroleum Co.	13	1,395
Sinclair Oil & Gas Co.	2	1,384
The Texas Co.	1	911
Twin State Oil Co.	5	1,117
Total	71	26,062

Total Burbank	1,153	86,980
Total last week	1,134	70,746
Difference	19	16,234

Following are the daily average pipe line runs from the field, by companies: Gulf Pipe Line Co., 16,696 bbls.; Cosden Pipe Line Co., 6,364 bbls.; Kay County Gas Co., 6,329 bbls.; Osage Pipe Line Co., 2,360 bbls.; Oklahoma Pipe Line Co., 11,631 bbls.; Prairie Pipe Line Co., 5,664 bbls. Sinclair Pipe Line Co., 2,400 bbls.; Moore Refining Co., 1,224 bbls.; Empire Pipe Line Co., 682 bbls.; Ozark Pipe line Co., 1,166 bbls.; total, 54,922 bbls.

Daily average runs to storage were as follows; Standish Pipe Line Co., 19,341 bbls.; Mid-Kansas Oil & Gas Co. 3,490 bbls.; Twin State Oil Co., 993 bbls.; George S. Bole, 800 bbls.; Sinclair Oil & Gas Co., 6,119 bbls.; Delmar Oil Co., 1,715 bbls.; total, 32,458 bbls.

Tulsa County Operations

Tulsa County was the scene of considerable activity. A well good for 30 bbls. was brought in by Smith and others in their No. 3 Parks, CEL SW NW NW, Section 13-18-12, from sand at 1,906-2,004 feet. A rig was on the ground for a test by the Sand Springs Home, No. 1 Grayson, CEL SE NW, Section 18-19-12, and a machine was in place for the Shaffer Oil & Refining Co.'s No. 3 Bruner, C SE NE SE, Section 6-19-12. The Mutual Oil Co. was drilling at 450 feet in its No. 1 Bruner, SW cor. SE NE, Section 6-19-12. The Sand Springs Home was drilling its No. 1 Twin Cities, CSL NE NW SE, same section, at 1,610 feet, and was below 1,320 feet in its No. 4 Bruner, SE cor. NW SE, same section. C. H. Terwilleger was drilling at 600 feet in his No. 1-A Harrison, NW cor. SW NW, Section 8-19-12, and the Echo Oil Co. was drilling at 1,200 feet in its No. 1-A Grayson, SE cor. NE NE, Section 5-19-12. Dillard and others were below 1,935 feet in their No. 2 Paro, NW cor. SW NE, Section 9-17-14, and were drilling ahead.

In Creek County, the Iron Mountain Oil Co. had a rig on the ground for No. 1 Carver, Jr., SE. cor. Section 8-17-11, and the Oklahoma Producers & Refiners Corp. had a rig on the ground for its No. 1 Cooper, NE cor. NW.

In Wagoner County, Sewell and others had a well good for 35 bbls. natural from sand at 785-95 feet in their No. 1 Allen, NW cor. SW, Section 15-17-16. A 20-bbl. natural producer was brought in by Cole and others in their No. 1 Harris, CEL NE SE, Section 12-17-16, from sand at 735-54 feet.

No developments of importance were reported from Okmulgee County during the week, the usual number of failures having been plugged and abandoned. The Transcontinental Oil Co.'s No. 5 Grayson, NW cor. SE SW, Section 1-15-11, was dry at 3,210 feet. The Waite Phillips Co. had a duster at 2,915 feet in its No. 1, SW cor. NW SW, Section 15-15-11, an old well. Another was Thompson's No. 1 Gaither, SE cor. NW SW, Section 28-15-12, which was abandoned at 2,770 feet.

Waxler & Preisler shot their No. 2 Morton, CWL SW SW, Section 31-13-12, with 40 quarts in sand at 2,489-2,510 feet, and it made 25 bbls. of 38.6 gravity oil after the shot.

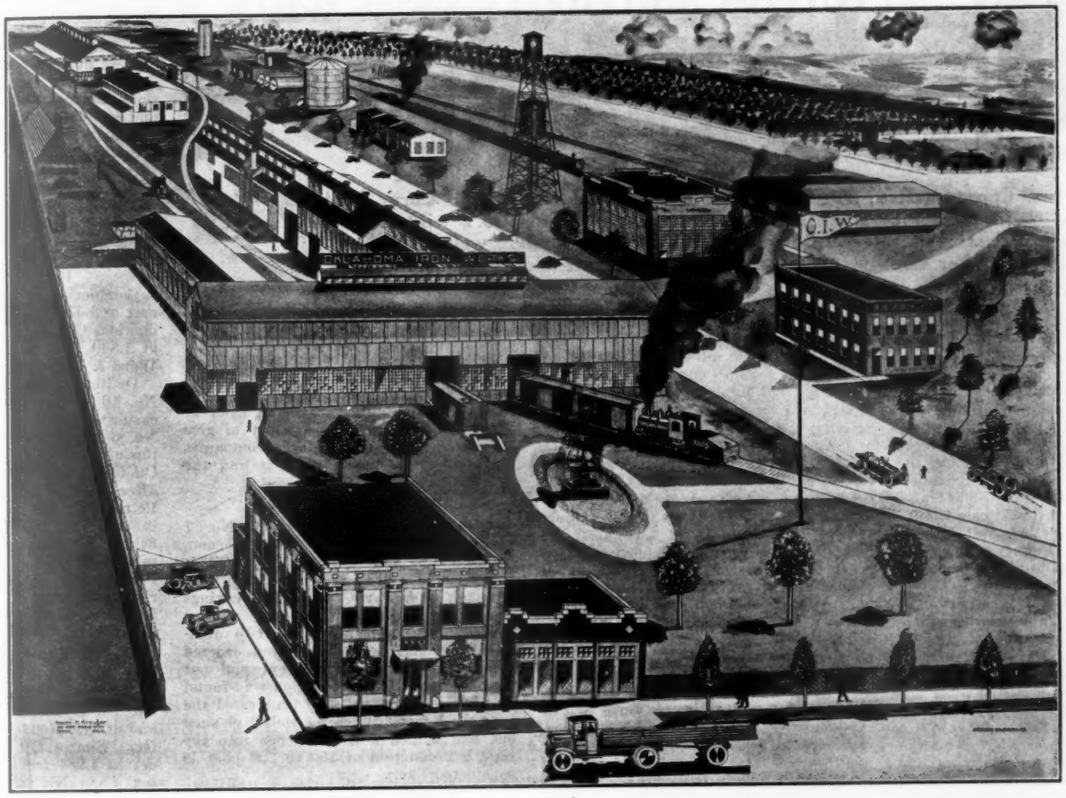
In Okfuskee County, Bassett & Storm's No. 1 Dyer, NE cor. NW, Section 12-13-7, was good for 40 bbls. natural from sand at 3,549-71 feet. The Texas Co. was spudding its No. 1 Samuels, NW Co. SW, Section 5-13-8.

Tonkawa Production

The daily average output of the various companies in the Tonkawa Field for the week ending January 23, was as follows:

Company—	Wells	Bbls.
Amerada Petroleum Corp.	35	1,747
Blackwell Oil & Gas Co.	30	1,518
Carter Oil Co.	6	966
Champlin Refining Co.	2	79
Champlin Ref. Co. and Twin State Oil Co.	1	10
Comar Oil Co.	280	17,123
Cosden Oil & Gas Co. and Maryland Refining Co.	15	643
Gypsy Oil Co.	83	6,057
Healdton Oil & Gas Co.	31	2,500
McCaskey & Wents	43	2,509
McMan Oil Co.	2	19

(Continued on Page 142)



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North-Central Texas Field

By Dan F. Dugan

Archer County active; 20 oil producers completed during week. Curry Pool and Caddo center of work in Stephens County. Texas Co.'s wildcat near Megargel attracts interest. R. M. F. Oil Co. gets 900-bbl. well in No. 1 B. Wilson, Archer County. Three-mile southwest extension of Sunshine Pool.

FORT WORTH, Tex., Jan. 28.—For the first time in several weeks the production runs for the past seven days show an increase in comparison with the previous seven days of 2,292 bbls. daily, with the total production for the field amounting to 108,467 bbls., as against 106,175 bbls. daily for the previous week. All of the semishallow pools made increases; the Burkburnett Pool gained 685 bbls., the Electra Pool, 1,575 bbls.; and the Iowa Park Pool, 565 bbls daily. Stephens County made a small loss of 460 bbls., Eastland County gained 62 and the Wildcat Pools lost 80 bbls. daily.

Eastland Activity

After several weeks of inactivity, the Eastland Field is manifesting considerable activity and several completions were reported. New rigs are going up in various parts of the field as an optimistic feeling prevails with the price advances and the belief is general other increases will follow.

Five completions were reported for the week consisting of two oil producers, one gas well and two disappointments. The Texas Co.'s No. 4 Hightower is flowing by heads around 50 bbls. at 1,230 feet. Turner & Clayton have two new wells on the Rio Bravo lease in the western extension of the Lake Eastland Field. No. 1 is flowing by heads, good for 75 bbls., at 3,324 feet, after a jolt of 80 quarts. No. 1 Steele, a short distance north of Eastland, is a producer but the quantity has not yet been determined. It swabbed 40 bbls.

Plans are now under way at Cross Plains by local operators for the erection of a topping plant to handle production from the Pioneer and Cross Cut sections, with provision for enlargement as other developing areas may require. Tom Bryant, of the firm of Crabb, McNeal & Bryant, owner of production in both the Pioneer and Cross Cut Pools, is one of the promoters of the new plant.

Watley and associates, drilling No. 1 Ray on the Young and Throckmorton County line encountered a gas sand at 844 feet, which is producing in the neighborhood of 7,000,000 feet of gas daily. The finding of this new pay has created interest in development in this part.

The Zada Belle Oil Co.'s No. 1 Weldon, Palo Pinto County, is showing 40 bbls. a day and the Sinclair Pipe Line Co. will lay a 2-inch line from its main line in the Dalton Field and pump the oil to the larger line at the discovery well.

Stephens County Work

Probably the most active spots in Stephens County are in the vicinity of the Curry Pool and north of Caddo. Between 40 and 50 new locations have been made in those two areas in the past 30 days. A renewed drilling activity has come, despite the fact that eight or 10 tests, shut down above the sand when the prorating order went into effect, have since been drilled in as dry holes.

New activity is also promised in the vicinity of the Tullos Field, where the Mid-Kansas interests have made five or six new locations. This territory is 3 to 4 miles northeast of Caddo.

The premier oil completion during the week is the Humble Oil & Refining Co.'s No. 6 Jones, making 150 bbls. from the Caddo lime daily at 3,190 feet.

Eclipsing any one week's reports in number of completions for several months, Archer County is the first to show the effect of the recent advances in the posted price with a total of 20 oil producers completed and six dry holes for the seven days. A hurry-up campaign of drilling activity is in full force in every section and at the present rate of development the county will have been thoroughly tested by mid-summer. In the list of completions, Murchison & Fain's No. 1-B Wilson is credited with an initial production of 485 bbls. daily at 1,595 feet, the largest initial producer reported. Two other tests are in the "spotlight"—Bohler and others' No. 1 Wilson, a 320-bbl. producer at 1,590 feet, and Riner & Bailey's No. 1 Wilson, showing 306 bbls. at 1,617 feet. All are located on the long deserted Geraldine Townsite.

Almost an unbroken string of derricks and locations line the roads from the Wichita County line to the south line of the county and on every ranch new derricks are to be seen and in what a few months ago was the abode of coyotes, prairie dogs and rattlers, the silence is broken by the noise of the rotary or the pounding of the hammer of the rig builder.

Activity in the Freeman-Hampton Pool, which has been graually falling off during the past few months, is again showing new life and a number of tests are planned within 30 days. The pool furnished a 40-bbl. pumper by the completion of the Freeman-Hampton Co.'s No. 14-A Ferguson from a sand at 1,460 feet.

A probable disappointment is the White Oil Corp.'s No. 1 Wilson near the Barclay-Meadows producer. The sand, picked up at 1,544 feet, showed for a good producer, acreage in the vicinity of the well soared in price and many deals were made with the view of drilling other tests. Later the well was bailed and showed considerable salt water. Casing will be pulled and the test will probably be drilled deeper.

Considerable interest has been aroused by the finding of a sand in The Texas Co.'s No. 1 Dormier in the Mathews survey, close to the east line of Baylor County, about 6 miles due north of Megargel. The test, which is in purely wildcat territory, encountered a sand at 1,165 feet. Casing has been set and the sand will be given a thorough test before drilling deeper.

The largest producing semicompletion for the week is the R. M. F. Oil Co.'s No. 1-B Wilson, in the southwest corner of Section 27. The top of the pay was picked up at 1,585 feet, when the well made several flows. When put on the swab it made over 900 bbls. the first 24 hours and goes on record as the best initial producer from that part of the field.

The Maer-Staniforth Syndicate's No. No. 1-B Wilson, in the east half of Lot 14, Block 27, encountered a sand at 1,380 feet, which, after drilling a few feet, flowed by heads and from present indications will make between 175 and 200 bbls. a day. Although almost entirely surrounded by wells producing from the 1,580-foot sand, the new producer is the first well to be completed in the 1,380-foot pay and is the means of extending that depth sand about 1 mile in a southeasterly direction and adding a new producing level to this part of the field.

A 3-mile extension to the southwest is promised the Sunshine Pool by the Burns & Maxson No. 1 Wilson. This wildcat picked up a promising sand at 1,546 feet. Casing is being set to give the well a test. Many large companies already own leases between it and the Sunshine Pool.

Wilbarger County Well

The South Vernon Oil Co.'s No. 1 Stephens, 8 miles south of Vernon, swabbed 100 bbls. in 24 hours. Oil is rising in the well at the rate of 100 bbls. although there are 25 feet of cavings above the oil sand. All the storage capacity has been filled and two additional 500-bbl. tanks have been ordered before the well is cleaned out and put on the pump. The production was found at 1,967 feet and the drill penetrated the sand three feet. When the well is cleaned out and drilled a little deeper into the sand a production of 150 to 200 bbls. is considered likely.

Wichita County Increases

A general review of all branches of the industry in Wichita County shows a decided increase in all field activities, with a certainty that the coming summer will be a busy one for operators in that section.

South of Wichita Falls 10 miles, in the vicinity of the Shappel Pool, is now leading all sections in intensive development. A number of new tests have been spudded, with others due for completion. The Shappel Oil Co.'s No. 2 Jackson set and cemented the casing on the sand at 1,814 feet, south of the discovery well. No. 3 started drilling and is below 1,000 feet.

The Scott & Gilliland No. 1 Chilson is pumping 125 bbls. of fluid, testing about 15 per cent water at 1,817 feet.

An interesting development was the finding of a good looking sand at 1,824 feet by Knight & Hines, in the No. 1 Dutton, in the center of Block 17, about 2 miles east of the Shappel Pool. If this test makes a commercial producer it will add a big scope of additional territory.

Another test of interest is the Gulf Production Co.'s No. 1 Miller, 3 miles north of the K. M. A. Pool. It is drilling a broken shale and sand formation following the discovery of an oil sand about 1 foot thick at 1,609 feet. The oil sand was succeeded by a break of blue shale and sand and it was drilled 7 feet in this break at the last reports with a small showing of oil.

The Electra Pool completions this past week show five dry holes, all abandoned around 2,000 feet. They are the Bass & Dillard No. 6 Waggoner; Magnolia Petroleum Co.'s No. 1-A Burnett; Noel & Erwin's No. 1 Waggoner; Simms Oil Co.'s No. 14 Burnett and the Texhoma Oil & Refining Co.'s No. 28-A Waggoner. No wells of even fair production were completed in that section. The largest was the Roy Carter No. 1 K. & K., pumping 90 bbls. at 1,800 feet.

It is announced from Electra that the Griswold Oil & Refining Co. will start construction in the near future on a 25-mile 4-inch pipe line from the refinery at Electra to the Archer County Field. Completion is expected within 60 days. This pipe line will afford this company direct connection with its own production in Archer County.

The Texhoma Oil & Refining Co. has voted a 6 per cent dividend to its stockholders from its 1923 earnings; in addition to this dividend, it appropriated approximately $500,000 for the installation of four units of the Dubbs Cracking process at the refinery north of Wichita Falls, which, together with other additions, makes it one of the most modern and complete plants in the State. During the same period the company constructed a casinghead gasoline plant in the South Electra Pool, costing approximately $125,000. According to the company's report for the past year, its properties produced a total of 1,742,874.25 bbls. of crude oil, which at the posted price prevailing, amounted to $3,428,950.40.

Burkburnett-Hirschi

Completions reported in the Burkburnett and Hirschi Pools are the Gulf Production Co.'s No. 1 Saunders, 17 bbls. at 1,840 feet; Henley and others' No. 1 Ward & Todd, dry at 1,000 feet.

Drilling: The Gulf Production Co.'s No. 16 Dale, set and cemented 6⅝-inch casing at 1,810 feet; Kemp and others' No. 6 Eads, running 6⅝-inch casing on top of a sand at 990 feet; the McDabb Oil Co.'s No. 2-A Saunders, cleaning out after a shot at 1,890 feet; Magnolia Petroleum Co.'s No. 22 Holcomb, drilling in shale at 1,075 feet; No. 2 Hortoin, fishing for lugs at 890 feet; No. 21 Hortoin, drilling in brown shale at 805 feet; Perkins and others' No. 4 Saunders, rigging to pump and test a sand at 1,865 feet; Pigg Oil Co.'s No. 20 Hirschi, drilling in blue shale at 1,675 feet.

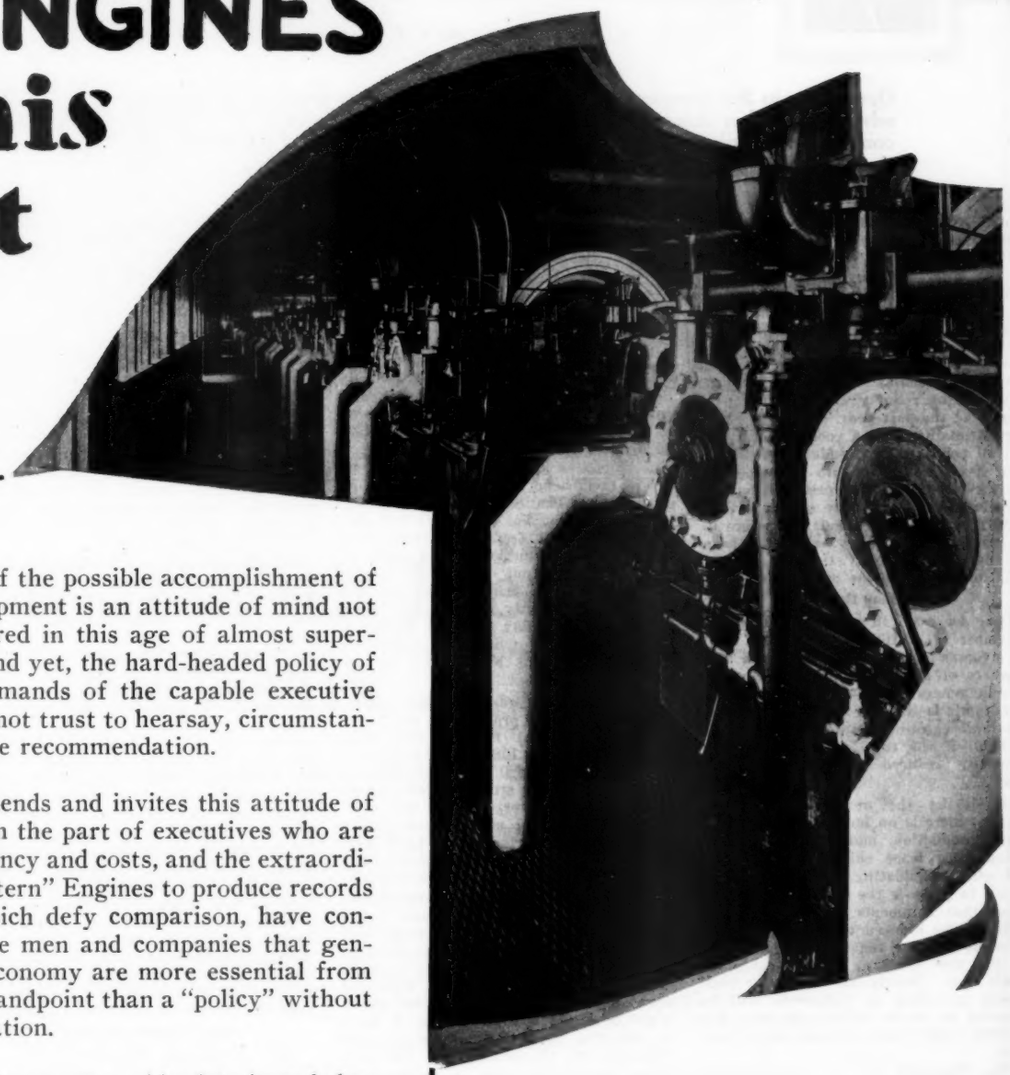
Electra Completions

Bass and others' No. 6 Waggoner, dry at 1,917 feet; Magnolia Petroleum Co.'s No. 1-A Burnett, dry at 2,165 feet; Noel and others' No. 1 Waggoner, dry at 2,070 feet; Simms Oil Co.'s No. 14 Burnett, dry at 1,987 feet; Texhoma Oil & Refining Co.'s No. 28-A Waggoner, dry at 1,970 feet; Carter and others' No. 3 K. & K., 90 bbls. at 1,800 feet; Scott and others' No. 1 Chilson, 125 bbls. at 1,817 feet; Whitley and others' No. 1 Reed, dry at 1,015 feet.

Drilling: The Texas Co.'s No. 28 Waggoner is drilling a hard sand at 1,710 feet; Gulf Production Co.'s No. 1-J Waggoner, drilling at 505 feet; Kruger and others' No. 8 Waggoner, drilling in brown shale at 780 feet; Magnolia Petroleum Co.'s No. 7 Douglas, drilling at 1,200 feet; No. 8 Allan, at 1,150 feet; Memphil Petroleum Co.'s No. 3 Honaker, rigging to pump and test a sand at 1,050 feet; Moran and others' No. 1 Honaker, spudding at 100 feet; Howe Drilling Co.'s No. 2 Waggoner, drilling at 808 feet; Bowen and others' No. 1 Fassett, spudding at 100 feet; Culberson and others' No. 21 Jeff Waggoner, drilling at 760 feet; Hartford Trust Co.'s No. 6-A Burnett, drilling in rock at 400 feet; No. 12 Burnett, drilling in lime at 1,820 feet; McClure and others' No. 4 Henson, drilling with a rotary at 700 feet; Magnolia Petroleum Co.'s No. 30-A Waggoner, drilling in shale at 640 feet; No. 31-A Waggoner, drilling at 1,610 feet; No. 2 Pere Waggoner, drilling in soft rock at 1,205 feet; No. 78-B Burnett, drilling at 1,270 feet; No. 67 Burnett, running 5½-inch casing at 2,070 feet; Perkins and others No. 2 Burnett, drilling at 180 feet; Sooner Oil Association's No. 7 Roberts, drilling with a machine at 125 feet; Sproles and others' No. 1 Fisher, drilling up junk at 1,060 feet; Stacy and others' No. 1 Burnett, drilling at 1,055 feet; Wiley and others' No. 1 Jeff Waggoner, bailing an oil sand at 1,240 feet; Texhoma Oil & Refining Co.'s No. 15-E Waggoner, fishing for drill pipe at 1,800 feet; No. 13-F Waggoner, drilling in blue shale at 1,250 feet; American Refining Co.'s No. 1 K. & K., drilling at 1,100 feet; Roy Carter's No. 4 K. & K., drilling at 1,500 feet; Staley and other's No. 1 K. & K., ratholing at 1,770 feet; Hanes and others' No. 2 Watkins, from a sand at 1,520 feet are bailing salt water and some oil; Parker Brothers' No. 1 Love, underreaming 10-inch casing at 1,000 feet; Panhandle Refining Co.'s No. 1

(Continued on Page 144)

16-160 h.p. "WESTERN" GAS ENGINES in this plant



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458

California Field Operations

By L. P. Stockman

Operations in San Joaquin Valley expected to resume as result of crude price advance. Tanker shipments will be curtailed shortly, it is believed. Weekly completions tending to hold up output at Torrance. Santa Fe Springs continues slump. Operations at Compton not entirely encouraging.

LOS ANGELES, Cal., Jan. 26.—The increase in the price of crude, fuel oil and gasoline, announced by the Standard Oil Co. and effective January 22, was welcomed particularly by operators in the San Joaquin Valley and other producers of heavy crude, as it establishes a minimum of 85 cents a barrel for low gravity oil. The fuel oil market has been The one redeeming feature. The production of light refining crude, which predominated the past year, did not yield as large a quantity or as good a quality of fuel oil per barrel of crude as the somewhat heavier San Joaquin Valley crude and the recent price increase will have a tendency to stimulate the output of low gravity crude. As a result, operators in the San Joaquin Valley, who have been idle during practically the entire year, will once again resume operations.

Production Declining

The decrease in production during December of 40,168 barrels a day from the average of the previous month was a source of much gratification to operators in general. It must be remembered that there is a large amount of crude, tops and gasoline in storage and it is doubtful if the total will be very substantially reduced during the coming year.

If, during the next three or four months, there is no indication of another heavy production, many companies will undoubtedly cease shipping crude East and start liquidating. The recent increase in price is the most assuring evidence that shipments to the east coast will soon be reduced to a minimum and seems to indicate that the Standard will be the first company to stop shipping crude east. Nearly all the major companies operating in California will be drawing on stocks within the next few months, rather than accumulating a suhplus.

The Standard Oil Co. of California has been selling its surplus crude to the Standard Oil Co. of New Jersey for over a year and since the company is no longer faced with an accumulating surplus each month, the shipments of the Standard Oil of California will probably be supplanted by increased shipments by the California Petroleum Co., which has a contract with the Standard Oil Co. of New Jersey to handle its California output. The Pan-American Petroleum Co. and the General Petroleum Co. will probably continue to ship as long as the crude is available, while the Associated Oil Co. will probably continue to ship for the next month or two at least.

Torrance

Notwithstanding the fact the number of completions at Torrance has been holding up comparatively well, there has been very little change in the field's total output of crude. Torrance has relied chiefly upon the weekly completions to maintain her steady production and if, for any reason, the number of completions should suddenly decrease, or the aggregate initial production show a drop, the field's production will probably react accordingly. At present time there are 142 drilling wells in the field, 70 of which are below 3,000 feet, 20 between 2,000 feet and 3,000 feet and the balance between 1,000 feet and 2,000 feet. This practically assures the field of a steady number of completions during the next month or two. Unless drilling operations are transferred elsewhere, Torrance will probably be able to maintain the present rate of production of 35,000 barrels for the next several months.

There was no let-up in the number of completions during the past week and, although none of the new wells was exceptionally large, several of them were above the average for this field. The Superior Oil Co. headed the list with three completions on its Torrance lease, two of them being successfully placed on production. The company finished No. 13 at 3,800 feet, No. 4 at 3,801 feet and No. 10 at 3,841 feet. The latter two were put on production, No. 4 registering an initial output of 972 bbls. a day of 23.2 gravity oil, while No. 10 put 200 bbls. of 24.1 gravity oil into the tanks during the first day. No. 3 Torrance was abandoned as a duster at 3,909 feet and three new rigs, No. 15, No. 16 and No. 17, were erected.

George F. Getty was successful in putting two wells on production, his No. 8 showing an initial flow of 822 bbls., while No. 13 made 108 bbls. The former was drilled to 3,680 feet and finished with a 6¼-inch oil string landed on bottom, while the latter, No. 13, was completed at 3,742 feet and finished with a 6¼-inch oil string landed at 3,740 feet. The output from both tests approximately 24.2 degrees and is comparatively clean. The Petroleum Midway Co. finished No. 2 Post Houts at 3,750 feet and No. 1 Scott at 3,650 feet. They were both comparatively small, the former showing a maximum output of 193 bbls. and the latter 432 bbls. No. 2 Post Houts is producing 24.1 gravity oil, which shows a cut of 2 per cent, while No. 1 Scott is producing clean 25.2 gravity oil. The Sherman Oil Co. secured its first producer during the week by finishing its No. 1 Torrance after drilling it to 3,775 feet. The initial production of 484 bbls. of 23.6 gravity oil is flowing through a 7/8-inch bean under a pressure of 190 pounds. Although the Bush-Voorhies Oil Co. has not yet been able to return No. 1 Rogers to production because of the collapse of a 6¼-inch liner, it was successful in adding one new well to its list of producers by completing No. 1 Schatz. This new producer, drilled to 3,818 feet and finished with a 6¼-inch liner landed on bottom, registered an initial flow of 672 bbls during the first 24 hours but indications point to a slight increase in the output, at least for a week or two before settling. The oil, testing 23.8 degrees and showing a cut of 1 per cent, is flowing through a ¾-inch bean under a pressure of 300 pounds.

The Chanslor-Canfield Midway Oil Co.'s next producer will probably be No. 2 Kettler, which was finished at 3,780 feet. An 8¼-inch oil string is being run in and if this well duplicates No. 1, recently completed, the east end of the field will receive quite a boost. The company lost no time after the completion of No. 1 Kettler in starting additional wells on this lease and has at the present time six active drillers and five additional rigs up for immediate work. On its Torrance lease, the company has two or three wells which should be early completions. No. 19 at 3,755 feet and No. 24 at 3,770 feet are being prepared for production, while No. 20, originally drilled to 3,786 feet, is flowing oil and water from 3,755 feet after being plugged back to this depth. The company has a present daily production of approximately 6,000 bbls. and if the water is successfully excluded from No. 20, and the other wells completed, the output should show an average of a little better than this figure for the coming month.

May Increase Output

The Petroleum Securities Co., a Doheny concern, should also be in a position shortly to increase its production as both its No. 5 and No. 6 were completed during the current week. A 6¼-inch oil string is being set in No. 5 at 3,800 feet, while the oil string has been landed in No. 6 at 3,795 feet and bailing should begin within the next day or so. Lang & Wall put their No. 4 on production at 3,780 feet and although the first day's run totaled 440 bbls., the output showed a cut of 5 per cent. It is believed, however, that the oil, which tests 21.7 degrees, will clean up after a few days' flow as most of the cut was mud and water, usually found in a hole drilled by rotary. It is flowing through a ½-inch bean under a pressure of 240 pounds. The Midway Northern Oil Co. has been bailing, swabbing and cleaning out its well No. 3 for over three weeks but has not yet been able to make it flow. It was drilled to 3,716 feet and will probably be put on the beam some time during the next week or 10 days.

The Universal Consolidated Oil Co. completed its No. 7 Torrance after drilling it to 3,775 feet and brought in a 573-bbl. well producing clean 24.2 gravity oil. It was finished with an 8¼-inch oil string and is flowing through a ¾-inch bean under a pressue of 180 pounds. The International Drillers brought in No. 1 Wermich shortly after the Universal completed its No. 7 and, although it was a slightly smaller well than the latter, the output was clean. No. 1 Wermich, drilled to 3,776 feet and finished with a 6¼-inch oil string, is producing 557 bbls. of clean 24.8 gravity oil daily. It is flowing through a ½-inch bean under a pressure of 420 pounds.

The Shell Oil Co. was not successful in securing production in its No. 1 Keystone, although a little heavy oil was bailed with the mud, sand and water. When production was not forthcoming the company decided to clean the well out as a last resort before making a deep test of it. Neither the Standard Oil Co.'s No. 1 Felker nor the Union Oil Co.'s No. 1 Weston shows any improvement. The former is drilling in a hard shell at 5,158 feet, while the latter is drilling in a like formation at 5,841 feet. The last two wells brought in were the Julian Petroleum Co.'s No. 4 and the Black Diamond Oil Co.'s No. 1. The former was drilled to 3,803 feet and finished with a 6¼-inch oil string landed at 3,794 feet. The output, 1,100 bbls., which tests 25.1 degrees and shows a cut of 2 per cent, is flowing through a 7/8-inch bean under a pressure of 210 pounds. The Black Diamond's No. 1 was finished at 3,800 feet and registered an initial output of 462 bbls. of clean 24.8 gravity oil.

Long Beach

Production at Long Beach continues to remain comparatively steady.

The Fred B. Foster Co. completed a 2,200-bbl. well, while the General Petroleum Co. added two completions to its list and 1,950 bbls. daily to its production. The Shell Oil Co. followed with two completions with an aggregate initial output of 2,900 bbls. Foster's new producer, No. 65, was drilled to 4,771 feet and finished with a 4¼-inch oil string. It produced 2,205 bbls. of 25.4 gravity oil during the first 24-hour production test. The output, showing a cut of about 3 per cent, is flowing through two ¾-inch beans under a pressure of 600 pounds.

General Petroleum's Completions

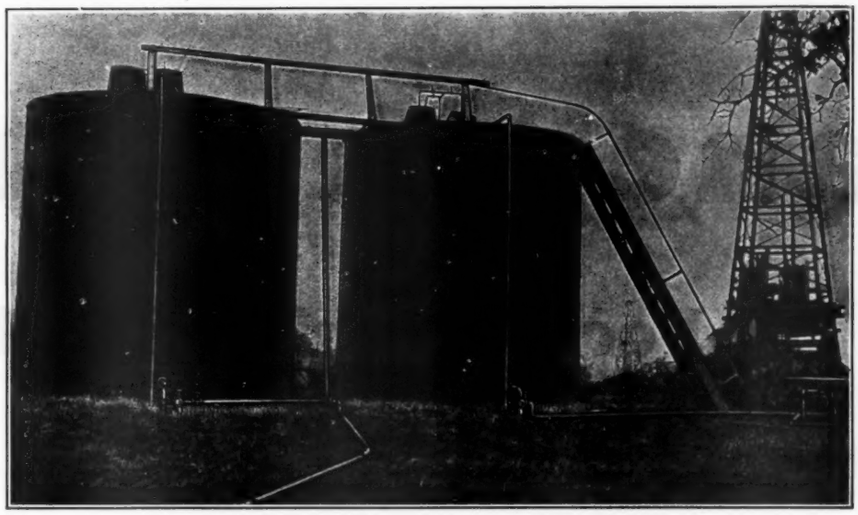
The General Petroleum Co.'s largest completion was No. 3 Jones, which registered an initial production of 1,750 bbls. of 29.4 gravity oil. It was drilled to 4,900 feet and finished with a 4½-inch oil string landed at 4,875 feet. The output, which is clean, is flowing through a 1-inch bean under a pressure of 310 pounds. No. 1 Bixby, the company's other well, was successfully returned to production after being cleaned out and slightly deepened. It came in doing 200 bbls. a day from 4,501 feet. The Shell Oil Co.'s two new producers were No. 2 Binkley and No. 1 Fee, the former being credited with an output of 2,000 bbls.

(Continued on Page 76)

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

Mevania, January 14, New York, crude	79,201
E. L. Doheny, Jr., January 15, New Orleans, crude	92,752
Agwistone, January 17, New York, crude	109,174
David McKelvy, January 18, New York, crude	76,861
Imlay, January 18, Baton Rouge, crude	74,256
Standard, January 18, New York, crude	117,871
Frederick R. Kellogg, January 19, New Orleans, crude	73,845
Yorba Linda, January 19, Philadelphia, refined	76,781
I. C. White, January 20, New Orleans, crude	76,905
T. J. Williams, January 20, New York, crude	88,935
Coastwise	
Alden Anderson, January 14, Avon, crude	70,902
Deroche, January 16, Martinez, crude	79,893
W. S. Miller, January 16, Richmond, crude	75,373
La Purisima, January 17, Seattle, refined	15,905
La Placentia, January 18, Martinez, crude	73,403
Los Alamos, January 19, Seattle, refined	14,749
Montebello, January 19, Oleum, crude	79,921
W. S. Miller, January 20, Richmond, crude	74,837
Los Angeles, January 20, Martinez, crude	73,459
Deroche, January 20, Martinez, crude	77,396
Exports	
El Lobo (Br.), January 15, Balboa, fuel	41,233
Emedio, January 15, London, refined	72,684
Anomia (Br.), January 17, Balboa, fuel	51,291
From San Francisco	
Frank G. Drum, January 14, Honolulu, fuel	71,369
Capt. A. F. Lucas, January 15, Seattle, refined	29,715
Tejon, January 17, Everett, fuel	47,693
El Segundo, January 18, San Diego, refined	30,095
Liebre, January 18, Portland, fuel	59,683
Atlas, January 20, Eureka, refined	8,961
H. T. Harper, January 20, Point Wells, refined	36,257
From Ventura	
Oleum, January 14, Avon, crude	31,210
From Port San Luis	
Utacarbon, January 16, Oleum, crude	78,640
Hoven, January 17, Portland, fuel	71,697



A modern tank plant for treating oil by the Tret-O-Lite process

To Treat With Tret-O-Lite "Just Mix It In"

Simplest, Most Economical, Most Thorough Process

Any arrangement of tanks and pipe which will mix Tret-O-Lite thoroughly into the cut oil or tank bottoms, and then give oil and salt water a chance to separate, constitutes a Tret-O-Lite plant.

For some emulsions Tret-O-Lite works better when heat is applied, in which case a means for heating the mixture must be provided.

But it may be broadly stated that the Tret-O-Lite Process consists in "mixing in the Tret-O-Lite."

In the case of the tank plant above, one of several prevailing types of Tret-O-Lite installation, Tret-O-Lite is fed into the emulsion from the small reservoirs above the tanks, agitation is secured by pumping air into the tanks. Heating, if desirable, is accomplished by means of steam coils. After agitation salt water and oil are allowed to stand until they separate.

The Tret-O-Lite Process is lowest in original installation cost, lowest in cost of labor to operate, lowest in cost per barrel of oil recovered, and most thorough of all processes, the separation of oil and salt water being **complete.**

Our book, "Tret-O-Lite," diagrams the prevailing types of installation and shows in detail why this process is the most thorough and economical yet developed. The importance to the producer of a correct choice of treating methods cannot be overestimated. The Tret-O-Lite Process thus deserves your study.

WM. S. BARNICKEL & COMPANY
St. Louis, Mo.
Offices and Plant: Webster Groves, St. Louis County, Mo.

Tret-O-lite

Announcement—

Hancock Barrel

10-Foot Pumping Stroke Now Practicable

The Foster-Hoefer Corporation, recently organized to introduce improved methods in oil and gas production, is pleased to announce that it has taken over the manufacture of the Hancock Anti-Sand Working Barrel, the only anti-sand working barrel yet offered which permits a ten-foot pumping stroke, as well as the regular common stroke.

H. M. A. Pumper in action on Jane Jefferson lease, well No. 7, Henryetta district.

In conjunction with this important step we have arranged to serve as distributors for the H. M. A. Geared Long Stroke Pumper, an actual field photograph of which is shown at left.

These two devices, in combination render practical the efficient application of a ten-foot pumping stroke on any oil well. Long stroke pumping is being adopted as correct in principle, by leading oil producers, such as Gypsy Oil Co., Waite Phillips and Carter Oil Co. If you have sand or water trouble then you are interested in this subject and should by all means investigate the facts about the Hancock Anti-Sand Working Barrel and the H. M. A. Geared Long Stroke Pumper before buying your long stroke equipment. We will be glad to have one of our field men call on you at your convenience.

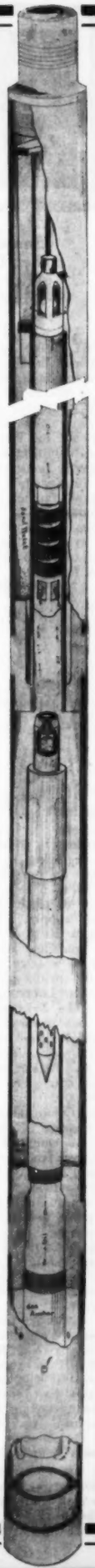
See us for late improvements such as Safety Rod Elevators, Safety Rod Hooks, Kelsey Sand Cells (Traps), Swabs Adjustable Chokes, Cable Cutters, Tubing Jet Flow Packers, also our feature improvement, the Fo-Ho adjustable Geared Circle Jack for breaking cable tool joints together with a general line pertaining to the production of oil and gas.

419 Wright Bldg.

FOSTER-HOEFER

In New Hands

Hancock Working Barrel
H. M. A. Long-Stroke Pumper



We are pleased to announce that we are now making the Hancock Working Barrel of all-steel construction, including a regular steel liner barrel.

Over 3,000 of these barrels are in use throughout the world by such leading producing companies as Gypsy Oil Company, Pure Oil Company, Producers & Refiners Corporation, Roxana Petroleum Co., Skelly Oil Co., The Texas Co., Oil Well Eng. Co. Ltd. of Burma, India.

The Hancock offers many advantages, having 4 to 5 times the sand capacity of other barrels, rope socket neck to facilitate fishing, special gas anchor, balls and seats of standard size, which handles same amount of fluid as common working barrel. We make regular 10-in. to 46-in. stroke barrels for 2-in., 2½-in., 3-in. and 4-in. tubing and 10-in. to 129-in. stroke barrels for same sizes of tubing.

The H. M. A. LONG STROKE PUMPER has met with instant success wherever it has been introduced. It gives from 5 to 10-foot stroke, will operate with one-half to two-thirds less power than with the ordinary method, and will pump from 25 to 300% more fluid.

A typical instance of satisfactory service is outlined in a letter from the Waite Phillips Company, which states that a well which had given a great deal of rod trouble and had averaged not more than 83 barrels of oil daily, and 300 barrels of water, gave no further rod trouble after the installation of the H. M. A. Pumper and is producing 275 barrels of oil per day, in addition to 600 barrels of water, through 3-in. tubing.

In Kansas the H. M. A. is now pumping2,400 barrels of fluid every 24 hours using 5-in. tubing, operating at 16 strokes per minute.

Export orders solicited. Write us.

Tulsa, Oklahoma

CORPORATION

North Louisiana-Arkansas

By M. L. Vaughn

Sanford and others' No. 1 Murphy, Union County, pumps 225 bbls.; Federal Pet. Co.'s No. 3 W. H. Murphy 175, and Houston Oil Co.'s No. 1 Ballard flows 150. Mangus & Co.'s No. 3 Fee, Ouachita County flows 200; Whittaker's No. 2 Berg., 175, V. K. F. Co.'s No. 4 Patton 150. Four Producers in Bossier Parish.

SHREVEPORT, La., Jan. 26.—A slight increase in production is again in evidence in the Smackover Field and the effect of the recent advances in the price of oil is already seen in increased drilling activity. The Cotton Valley and Oakland Pools in Webster and Union Parishes are holding the interest of operators in north Louisiana, and the Nevada Pool in Nevada County is proving an important factor in the Arkansas oil development.

Runs from the entire field during the past week averaged 164,930 bbls. a day, an increase of 2,575 bbls., and was distributed as follows:

North Louisiana	Bbls.
Caddo light	8,540
Caddo heavy	2,310
De Soto and Red River	5,420
Elm Grove	940
Haynesville	21,515
Homer	8,670
Bellevue	5,210
Total	52,605
Arkansas	
El Dorado	15,435
Smackover light	22,965
Smackover heavy	71,150
Stephens	2,775
Total	112,325
Total both fields	164,930
Total last week	162,355
Increase	2,575

Surveys in Monroe Field

Surveys are being made from the Monroe gas field in northeast Louisiana to Rayville, Tallulah and Vicksburg, Miss., with a view to piping the gas for a domestic fuel supply. Surveys are also being made to Ruston, Arcatia and other towns in Louisiana and it is expected work will be started on a number of lines in the spring.

The carbon industry has obtained a foothold in the Arkansas field. Permission has been granted by the Railroad Commission for the construction of a large plant near Camden. It will be built by B. F. Reeves, the first four units to be started at once and to cost about $350,000.

The City Commission of Monroe, La., has been making efforts to prevent pollution of the Ouachita River by crude oil waste from the Arkansas oil fields. Congressman Riley J. Wilson has a bill ready to introduce.

L. V. Ulrey, independent oil operator, who made one of the deepest tests in this territory on the Ramsey lease in Section 34-13-16 in De Soto Parish, has started another test, a deep well. The first test was 6 miles north of Logansport and the second is 6 miles east of Logansport.

Dr. S. T. Busey, pioneer operator in the Claiborne Field, has taken over the test started by Neil Scroggins in Section 32-26-4, Tallahatchee County, Mississippi, and will complete it. H. D. Easton, geologist, has reported favorably on the territory, stating it is a well defined structure, lying nearly due north and south for about 20 miles.

Union County Completions

Of the eight completions in Union County during the past week, all were producers with the exception of the deep test on the Townsend lease in Section 6-18-14, drilled by Woodley and others to a total depth of 3,143 feet. Numerous tests made in this well developed salt water and it was finally abandoned.

The Arkansas Natural Gas Co. completed No. 6 Cullens in Section 4-19-15, pumping 90 bbls. at 2,165 feet.

The Federal Petroleum Co. completed No. 3 W. H. Murphy, Section 22-16-15, pumping 175 bbls. from 38 feet of broken sand at 2,050 feet.

Ganzel and others' No. 1 McGraw in Section 7-16-16, came in at 2,310 feet, pumped 40 bbls. during the first 24 hours, then sanded up.

The Gulf Refining Co. completed No. 12 Lewis Werner in Section 5-16-16, pumping 60 bbls. at 2,260 feet.

The Houston Oil Co.'s No. 1 Ballard in Section 21-16-15, came in flowing by heads at the rate of 150 bbls. a day at 2,073 feet, then sanded up and is being cleaned out.

Sanford and others completed No. 1 Murphy in Section 8-16-15, pumping 225 bbls., 90 per cent salt water, at 2,303 feet.

The Steele Oil Co. completed No. 1 Rhodes in Section 12-16-17, pumping 100 bbls., 90 per cent sale water, at 2,303 feet.

Weatherbee and others completed No. 1 Holloway in Section 6-16-16, pumping 100 bbls. at 2,290 feet, nearly all of it salt water.

Considerable new work is being started in the Union County district and many wells, previously completed as gas wells, or which have pumped off and gone into salt water, are being drilled deeper.

Ouachita County Completions

Six producing wells and one failure were reported from this district last week. Giles and associates' No. 3 Watts is swabbing 130 bbls. at 2,270 feet, Section 30-15-16. Lanier and others completed No. 2 Shirey, Section 30-15-16, flowing 80 bbls. at 2,280 feet, and No. 3 Shirey, same section, flowing 50 bbls. at 2,280 feet.

The Mangus Oil Co. brought in No. 3 fee, Section 24-15-17, flowing 200 bbls. at 2,280 feet. The Sure Oil Co. pulled casing and abandoned No. 2 B. T. Laney at 2,300 feet, Section 31-15-15, in the heavy oil area.

The V. K. F. Drilling Co. brought in No. 4 Patton, Section 32-15-16, flowing 150 bbls. through a 2-inch tubing at 2,250 feet. Whittaker and others completed No. 2 Berg, Section 29-15-16, estimated flowing 175 bbls. through a 2-inch tubing at 2,280 feet.

Drilling Operations

A decided increase in drilling activity is noted during the past week with eight new wells started drilling and derricks up for five more. A summary of operations shows 4 wells waiting on standard rig, 11 temporarily abandoned, 65 drilling, 3 rigging up, 23 derricks and 2 locations.

Anderson and associates tested No. 1 J. E. Anderson dry at 2,370 feet and are arranging to drill deeper, Section 26-15-17. Foster & Sanford have derrick up for No. 1 Purifoy, Section 10-12-19, wildcat territory.

Hale and associates are down 1,320 feet in No. 2 Ward, Section 25-15-17. Howe and others have drilled to 1,200 feet in No. 1 Elliott, Section 24-15-17. The Houston Oil Co. is down 1,900 feet in No. 3 Patton, Section 31-15-16. The Humble Oil & Refining Co. is arranging to drill No. 3 Laney deeper, Section 31-15-15, a well formerly completed as a 130-bbl. pumper at 2,022 feet.

Dr. Johnston has derrick up for No. 1 Solmson, Section 29-15-16. The Johnson Drilling Co. has derrick built for No. 2 Wells, Section 25-15-17. Lanier and others have rig up for No. 1 Solmson, Section 29-15-16. Lewis & Clark are drilling at 1,850 feet in No. 5 Berry, Section 24-15-17. McFann and others are arranging to drill No. 1 Mullins deeper from 2,050 feet, an old well completed last year as a small pumper, Section 27-15-16.

Walter Pafier is drilling at 2,310 feet in No. 1 Eagle Mills Co., Section 25-12-16. The Phillips Petroleum Co. is down 1,450 feet in No. 3 Hearnsberger, Section 33-15-15. Snowden & McSweeney are waiting 6-inch casing at 2,240 feet for No. 3 Taylor, Section 29-15-16.

The Texas Co. has set 6¼-inch casing at 2,190 feet in No. 1 Lagrone, Section 30-15-16, and has derrick pattern up for No. 1 F. L. Chandler, same section. It is down 1,280 feet in No. A-4 Solmson, Section 29-15-16, and has set 15½-inch casing and drilled to 1,580 feet in No. B-2 Solmson, Section 32-15-16.

Stephens Field

Ouachita County Area: The Atlantic Oil Producing Co. is testing 12 feet of sand at 2,095 feet in No. 4 John Webfer, Section 30-15-19.

Columbia County

The Atlantic Oil Producing Co. is bailing to test No. A-1 Webfer at 2,095 feet with 12 feet of broken sand, Section 25-15-20. Dowby and others are drilling 6-inch plug at 2,170 feet in No. 1 Ray-Fullenweider, Section 12-17-22. The Magnolia Petroleum Co. is drilling at 1,100 feet in No. 3 Hammond, Section 25-15-20.

Bellevue Field

Five completions were made in the shallow sand district in Bossier Parish during the week, four producers, the largest of which made 75 bbls. a day. The Humble Oil & Refining Co. completed Bliss & Weatherbee No. A-8, in Section 10-19-11, pumping 10 bbls. at 380 feet.

The Louisiana Oil Refining Corp. completed fee No. D-11, in Section 15-19-11, pumping 15 bbls. at 340 feet.

Olmstead and others completed Strange No. A-13, Section 23-19-11, pumping 25 bbls. of oil and 500 bbls. of salt water at 300 feet.

R. O. Roy's No. 30 Scandland, in Section 15-19-11, made a 75-bbl. pumper at 338 feet.

The Louisiana Oil Refining Corp. is rigging up to drill fee No. D-12, in Section 15-19-11; Olmstead and others are rigging up to drill Strange No. A-14, in Section 23-19-11; R. O. Roy is rigging up to drill No. 29 Scandland, in Section 15-19-11, and the Standard Oil Co. is drilling at 125 feet in No. 8 Bliss & Weatherbee, Section 10-19-11.

No new production was developed in the Caddo Field during the week, the only completion being the Humble Oil & Refining Co.'s deep test on the Youree-Randolph lease in Section 24-20-15, abandoned at 2,945 feet, 5 miles east of Moringsport.

Several interesting tests are in progress south of Shreveport, in line with the new development in east Texas. The Crude Oil Co. is drilling ahead at 2,030 feet in No. 1 Alexander & Ledbetter, Section 27-16-14, 10 miles south of Shreveport and about midway between the Bethany gas field in Panola County, Texas, and the Elm Grove gas and oil field in the south end of Bossier Parish.

The Caddo Western Oil Co. has gone back into its No. 1 Gardner & Bladen, Section 2-16-15, a mile west of Reisor and 5 miles southwest of Shreveport, and is arranging to test at 2,050 feet.

In the Pine Island district, the Alabama Petroleum Co. is drilling at 3,300 feet in No. 1 Barlow, Section 5-21-15; the Dixie Oil Co. is drilling at 1,575 feet in No. 58 Robertshaw, Section 14-21-15; the Fortuna Oil Co. is swabbing No. 12 Herndon, Section 22-21-15, testing at 1,660 feet, and the Muslow Oil Co. is arranging to pump No. 3 Brown fee, in Section 31-21-15.

Claiborne Parish

The Ohio Oil Co. tested dry at 2,837 feet in No. 1 Crump, Section 13-23-8, and is running core barrel to 2,843 feet.

De Soto Parish

C. R. Tyrell is drilling at 1,890 feet in No. 1 Poter, Section 22-12-13, 2 miles southeast of Mansfield.

Ulrey and others are arranging to test in the chalk rock at 1,800 feet in No. 1 Frost Johnson, Section 3-11-15.

Louisiana Wildcats

Bienville Parish: A test which may prove of interest is that of the Ohio Oil Co. on the Bodcaw Lumber Co. land in Section 19-16-6. It is in purely wildcat territory, 3 miles west of Bienville and 12 miles south of Gibsland, 25 miles south of the Homer Field in Claiborne Parish. The well showed gas at 2,836 feet and 6-inch casing is being set at 2,860 feet.

The Arkansas Fuel Oil Co. is setting 12½-inch casing at 200 feet in No. 1 Harrell, Section 6-18-5, 2 miles north of Arcadia.

Lincoln Parish: The Middle Fork Syndicate has gone back into its test on the McKay, in Section 9-20-3w, and will clean out the hole and resume drilling at 2,356 feet. The test is one of a series surrounding Farmersville and is just south of the Union Parish line.

Morehouse Parish: The Amalgamated Oil Co. set 8-inch casing at 960 feet in No. 1 Southern, Section 19-20-5e. The Richland Oil & Gas Co. set 8-inch casing at 995 feet in No. 1 Chess Wymond, Section 32-19-6e. The Southern Carbon Co. is drilling at 2,100 feet in No. 11 Spyker, Section 17-20-5e. The Transcontinental Oil & Gas Co. is rigging up to drill No. 2 Chess Wymond, Section 1-18-5e.

Ouachita Parish: One gasser was added to the long list of producers in the Monroe gas district, the United Oil & Producing Co. getting a 20,000,000-foot well in No. 1 Kerr, Section 12-19-4e. The Consumers Gas Co. set 8-inch casing at 1,050 feet in No. 3 Riche, Section 32-19-5e. J. M. Huber and others are drilling at 1,930 feet in No. 4 fee, Section 5-18-5e, and the Magnolia Carbon Co. at 1,865 feet in No. 2 fee, Section 18-20-5e.

The Southern Carbon Co. is rigging up to drill No. 7 Fairbanks, Section 5-19-4e; set 6-inch casing at 2,190 feet in No. 25 fee, and drilling at 175 feet in No. 26 fee, Section 27-19-5e. The Standard Carbon Co. set 6-inch casing at 2,225 feet in No. 2 Puckett, Section 22-19-5e, and the West Virginia Land & Timber Co. is rigging up to drill No. 3 fee, in Section 4-18-5e.

Union Parish

Another gas well was completed during the week by the Union Power Co. on their Union Sawmill Co. lease, in Section 29-21-4e, No. A-5 making 10-

(Continued on Page 76)

Stay-tistics

THIS being a statistical edition of The Oil and Gas Journal calls to mind the fact that it's quite the vogue in certain lines for salesmen to quote statistics. If four hundred thousand and steen cars of a given model have been made and sold, it follows, we are told, that they must be good cars.

But with all due respect for statistics, which are invaluable on occasions, when you go out to buy oil country equipment you are interested not in statistics—but in stay-tistics.

Not how many have been made, but how long will this one last. How economically may it be used or operated. What will be the cost of repairs, when and if necessary, and where may replacements be had.

And so it is that while the Frick-Reid Supply Company has many lines as old and honorable as Reid Pumping Powers and Engines, they have other lines as comparatively new as the Frick-Reid Light Plant. All are Stay-Getters; all are making STAY-tistics history!

There's a Frick-Reid Store in your field. And Frick-Reid Stores are manned by the finest bunch of fellows in the world.

Dreadnaught and other Rotary Equipment—Complete Cable Tool Equipment—Reid Gas Engines and Powers—Donovan Boilers—Roebling Wire Lines—Whitlock Cordage—F-R Electric Light Plants—Axelson Working Barrels and Sucker Rods—Rensselaer Valves—National Transit Pumps—Jones and Laughlin Tubular Goods—Ratigan Beam Hangers, Sure Grips, etc.—Camel Hair Belting—F-R Drilling and Pumping Service Belting—Warren Steam Engines, etc.

Fields of the Central West

By Whit

Bath Township Oil Co. gets 70-bbl. well in McClure district, Hancock County, Old Lima Field. Eilerman Bros. find producer in Shelby County. Masters, Bundy & Thompson well in Jay County, pumps and flows 176 bbls. first 24 hours and 239 second 24 hours. Good completions in Hotmire Pool.

FINDLAY, Ohio, Jan. 28.—The coldest weather of the winter has brought a slowing down of development work in the Central West Field, especially in eastern Kentucky, where no new completion was reported, and other fields had but few, the Indiana Field showing the best results, along with the Lima Field and Central Ohio.

The most interesting development in northwestern Ohio comes from the south side of the old defined field, in Shelby County, where Eilerman Brothers drilled a test on the George Eilerman farm, near the hamlet of Newport, southwest of Sidney, far removed from production. It struck the top of the Trenton at 1,250 feet and the oil was found at 50 feet in, at a total depth of 1,300 feet, where it was given a 100-quart shot. While not yet thoroughly tested, it looks as though it would make an 8- or 10-bbl- pumper. No. 2 has been started.

Six completions were reported from the old Lima Field, the best being the Bath Township Oil Co.'s No. 4 on the Z. Henry farm, Section 14, Pleasants Township, Hancock County, in the McClure district, and showed a production of 70 bbls. In Allen Township, same county, the Ohio Oil Co.'s No. 16 on the southwest corner of the Mary Decker farm, Section 25, showed considerable salt water at 1,509 feet, but also has a showing of oil and may make a producer.

In Bloom Township, Wood County, the Ohio Oil Co.'s No. 20 on the J. A. Moyer, Section 6, is reported a dry hole, and No. 17, on the J. Weirick, Section 17, is drilling. In Portage Township, R. C. Shuler and others' No. 1, on the George Weaver, Section 31, is dry. In Henry Township, the Ohio Oil Co. abandoned No. 21 W. A. Jones, Section 1; No. 12 Peter Fryman, and Nos. 23 and 29 John Dahn, Section 2. In Liberty Township, the Ohio Oil Co. abandoned Nos. 1, 5, 8, 10, 13, 16, and 17 John Walbolt, Section 26; No. 11 R. Sommers, Section 24; No. 22 C. Bay, Section 35; No. 24 P. F. Doney, Section 24; Nos. 1, 3, and 8 H. McIntyre, Section 24; No. 20 J. H. Mitchell, Section 2; Nos. 3 and 7 Lovina Munn, Section 11; Nos. 1 and 3 Anna W. Corey, Section 10, and Nos. 23 and 24 W. T. Reese, same section.

In Middleton Township, Wood County, the Five Points Oil Co. is drilling No. 7 on Marshall Bruce, Section 20, and William M. Stitt is drilling No. 10 A. J. Ovitt, Section 17. In Troy Township, Mountler Brothers abandoned Nos. 7, 10 and 11 D. H. Rex, Section 36, and Nos. 2 and 5 Fritz Dierker, same section. In Perrysburg Township, Davis & Carroll are drilling No. 2 William Grolle, Section 33. In Lake Township, C. F. Zeising and others are drilling No. 3 Emil Brandt and No. 1 Bingham Brothers, Section 36.

In Eagle Township, Hancock County, Fuller and others are drilling No. 13 H. P. Smith farm, Section 18.

In Amanda Township, Allen County, W. L. Parmenter is drilling No. 16 on the V. A. Caldwell No. 2 farm, Section 30, and in Jackson Township, Geselchen & Hawk abandoned No. 4 H. Zerbe farm, Section 8.

In Douchouquet Township, Auglaize County, R. C. Cheuvront abandoned No. 1 J. A. Moyer, Section 35, and the Ohio Oil Co. abandoned Nos. 2 and 7 Jacob Reichelderfer No. 2 farm, Section 33. In Logan Township, Wesley Sprague started the drill at a test on the William Gochenour, Section 5. In Moulton Township, Charles Mertz and others are drilling a test on the J. Bucher, Section 9. In St. Mary's Township, the Ohio Oil Co. abandoned Nos. 4 and 5 C. J. Hasaker, Section 20, and No. 5 Fred Behrens, Section 19.

In Woodville Township, Sandusky County, the Ohio Oil Co. pulled out old No. 1 well on the J. H. Doepker farm, Section 7.

In Granville Township, Mercer County, E. G. Henderson's second test on the C. Rammell, Section 19, was a dry hole, and V. G. Lowery has started work on No. 6 Stephen Wendel, same section.

In Jennings Township, Van Wert County, Lynch & Sellers abandoned No. 3 J. C. Biner, Section 7. In Allen Township, Ottawa County, John Weber is drilling No. 3 Mary Bringe, Section 11, and Arnold, Bell & Hanawalt abandoned No. 2-A. Shessler, Section 17.

Central Ohio Field

Interest in the Shiloh gas field in the northern part of Richland County, and north of Mansfield, in the Central Ohio Field continues, although the pool itself in about defined, yet there are numerous locations inside yet to drill. Some excitement prevailed at Shiloh recently when the well being drilled on the Burns lot inside the village struck an immense pocket of gas in the shale at around 500 feet and friction caused it to catch fire and burn down considerable machinery, causing the owners, Mithcart & Noah, much loss. Only three new completions are reported from the Shiloh Pool. H. Noble and others' No. 1 on the Doctor Noble lease, Section 1, Cass Township, showed a volume around 1,500,000 feet. No. 2 is drilling. C. E. Ozier and others' No. 8 Seeman, same section, is an average gas well, as is Cuppler & Ozier's No. 2 on the Barnes, in Section 2. Bricker Brothers started a well for No. 1 on the Moritz, Section 1, and Weideman and others started No. 2 D. Malone, Section 2.

Bodds and others erected a standard drilling outfit and are down around 500 feet at a purely wildcat test in the city limits of Galion, in the northeastern part of Crawford County, southwest of the Shiloh Field.

The Ashfield Development Co. has drilled a light Berea sand gas well in its No. 3 Roy Culler lease, in Miflin Township, Ashland County, and started drilling No. 4. Barnhart & Geiger are also drilling a test on the Hoover heirs' lease, in the same township. This well was dry in the Berea sand, but going deeper. This well has nearly 400 feet of drive pipe in the hole.

The East Ohio Gas Co.'s No. 4 on the C. O. Ports, Section 36, Plain Township, Wayne County, is reported a dry hole. In Cannan Township, same county, the Logan Gas Co. has a fair gas well in No. 3 W. C. and M. Notestone, Section 20, and one somewhat lighter in No. 1 Charles Kollert, Section 19, same township. This company's No. 1 Ellen Metcalf, Section 30, Prairie Township, Holmes County, has showing of both oil and gas and will be given a shot.

Indiana Field

No doubt the most attractive spot in Indiana at this time is the Hotmire Pool, along the dividing line of Jay and Randolph Counties, the work being done in Pike Township of the former county and in Ward Township of the latter. The bulk of the completed wells lie on the Jay County side, although some remarkably fine producers have been found in Randolph County. This pool has a remarkable late completion, which shows that with the arrival of spring a great deal of new work will be started. This new well is Masters, Bundy & Thompson's No. 8 on the C. Rathbun farm, Section 35, Pike Township, Jay County, and the really largest producer yet found in the pool. This well, pumping and flowing natural under a partial test, made 176 bbls. the first 24 hours and 239 bbls. the second 24 hours, and did not lower the oil in the least that was noticeable. It is a five-spot well, surrounded by five other natural pumping wells making 100 bbls. per day at an average age of four and a half months, and not pumped down. It is expected the new well will show an average of 40 bbls. a day after being on the pump for a long period.

Oil operators in the Hotmire Pool area are starting drilling. Several wildcat tests are being planned and acreage is being taken up. Possibilities for new pools like the Hotmire lie along the Mississinewa River from the Albany-De Soto Pool in Delaware County to the Ohio State line and beyond.

The oil produced in the Hotmire Pool is handled through the lines of the Wabash Pipe Line Co., of Portland, Ind., and from this line goes to the Paragon Refining Co. at Toledo, Ohio.

In the Hotmire Pool, outside of the big Rathbun well mentioned, other good ones have just been completed. On the A. Ritenour farm, Section 34, Pike Township, Jay County, Masters & Colt completed No. 11 with a flush of 30 bbls. This well will, like others in the same area, settle to about a 6-bbl. pumper. Nos. 12, 13 and 14 same farm, are drilling. N. E. Masters' No. 4 on the Fannie Lyons farm, same section, pumped 38 bbls. and he is drilling No. 1 Oleson farm. The Omar Oil & Gas Co.'s No. 5 J. E. Mock farm, section 35, pumped 28 bbls. and No. 6 pumped 73 bbls., with Nos. 7 and 8 drilling. This company's No. 1 on its fee, same section, pumped 115 bbls. George Hoagland completed a fairly good gas well at a test on his farm, a little in advance of the pool, while the Morse Oil & Gas Co. found a dry hole on the G. W. Brake farm. Tuguary & Sheets started No. 2 on the F. Hotmire farm.

In Penn Township, Jay County, the Keystone Oil & Gas Co.'s No. 2 on the Mary Martin farm, Section 8, is a 2 bbl. pumper.

In Wabash Township, Adams County, Lewis Centlivre, a well known Fort Wayne resident, who operated years ago in the old Indiana Field, has brought in a small well at a test on the Mary Garlinger farm, Section 23.

In Nottingham Township, Wells County, Studebaker Bank has abandoned Nos. 5 and 6 M. Shaw farm, Section

(Continued on Page 148)

Kansas Oil Field News

By C. D. Lockwood

The effect of development work in the areas where wildcat discoveries have been made during the past few months is beginning to be noticeable in the total number of operations in the Kansas Fields. Last week the figure was 259, while the total of operations the previous week was 248. The increase of 11 was accounted for by a gain of 10 rigs and 14 wells drilling. While the number of wells shut down decreased by 3 and the completions fell from 15 to 6. The detailed figures for last week follow: Locations, 28; rigs, 72; wells drilling, 85; wells shut down, 68; completions, 6; total, 259.

The Russell County wildcat, the M. M. Valerius Oil Co.'s No. 1 Oswald, SE cor. SW, Section 8-12-15w, was drilled four feet deeper, making its total depth 3,014 feet. Sand was topped at 2,998 feet. Deepening of the well caused it to fill up to within 100 feet of the top in 7 hours, and it was making about 150 bbls. daily. It formerly required 14 hours to fill up to within 400 feet of the top. The oil was filtering out to a light green color of 42 degrees gravity, which strengthens the belief of some observers that the production in this well is coming from seepage and that a real pool will be found somewhere in the vicinity.

Some attention was drawn during the week to a wildcat in Elk County, the Service Oil & Supply Co.'s No. 1 Donnell, SW cor. NW, Section 12-29-9, which topped the sand at 2,040 feet and was drilled to 2,075 feet. After a 100-quart shot, it was standing with 1,500 feet of oil in the hole. The location is in the center of a 1,600-acre block.

New Activities

Some of the new activities in the western States included a location in Rice County for a test by Proctor and others in their No. 1 Taylor, NW cor. Section 15-21-6w, and another in Stafford County for King & Langston's No. 1 Sifus, NW cor. SE, Section 23-21s-11w. Barton County also had a new location in H. V. Nunsanger's No. 1 Emleigh, SW cor. SE, Section 1-18-12w. A rig was in place for another test in this county by McMahan & Sumpter, in their No. 1 Weiker, NW cor. Section 19-19-12w.

Several tests in the wildcat districts were at interesting depths. In Jefferson County, north of Oskaloosa, the Northern Counties Oil Co. was fishing at 3,400 feet in its No. 1 Edwards, SE cor. NW NW, Section 13-9-19. In Republic County, the Mitchell Oil & Gas Co. was drilling at 2,025 feet in its No. 1 Walker, SE cor. NE NE, Section 23-2s-1w. In Rice County, Hipple & Childers were carrying a hole full of water at 2,900 feet in their No. 1, SE cor. NW, Section 35-20-6w. In Reno County, south of Hutchinson, Haynes and others' No. 1 Holleran, NW cor. SE NW, Section 28-26-6w, was shut down at 2,610 feet. In Kingman County, a dry sand was found at 1,369-84 feet in Fleeger and others' No. 1 Sheldon, C SE NE, Section 20-27-7w, and Hale and others were shut down at 2,543 feet in their No. 1 Garner, SW cor. NW, Section 34-27-7w.

In Barton County, the Cheyenne Oil & Gas Co. was fishing at 3,525 feet in No. 1 Sooy, SW cor. Section 27-18-12w. The Mountain States Oil Co. was fishing at 2,300 feet in its No. 1 Everleigh, SE cor. NE, Section 22-18-13w, after getting 4,000,000 feet of gas at that depth. In Barber County, B. B. Brown was drilling at 2,560 feet in No. 1, NE cor. SW NE, Section 33-30-14w. In Seward County,

(Continued on Page 148)

DAYTON

ALL STEEL SLEEVE—Fig. 5
Made in All Sizes

For use on broken lines as well as screw lines at intervals, to withstand expansion and contraction

The DAYTON PIPE COUPLING Co.
Dayton, Ohio.

Gulf Coast Oil Operations

By P. L. McGreal

Republic Production Co.'s No. 75 Dolbear, Hull Pool, flows 800 bbls. Eighteen deep tests in various pools, notably Orange and Goose Creek, United North & South Co. completes three in Luling for 2,500 bbls. total. Neuvo Oil Co.'s No. 2, Webb County, Laredo, rated 125 bbls. Black Panther's No. 1, 100.

HOUSTON, Tex., Jan. 28.—In last week's review attention was called to the increase in the number of rigs in the Coastal pools. Additional rigs have started work during the week in such pools as Sour Lake, Batson and Humble.

The estimated daily average gross production for the Coastal heavy gravity pools alone continues to fluctuate between 78,000 and 80,000 bbls. The gross for the Coastal region, the light gravity fields of the southwest and miscellaneous districts, is placed at 85,945 bbls. for the week, a gain of 1,090 bbls. compared with the estimate for last week. The Luling Field is placed at 10,250 bbls. and the Callihan district at 2,000 bbls. It is reported water is commencing to show in some of the producers in the Callihan district.

The estimate of districts is as follows:

District—	Bbls.
Batson	1,090
Blue Ridge	700
Barber Hill	285
Dayton	95
Damon Mound	1,690
Edgerly	375
Goose Creek	13,375
Humble	5,450
Hull	17,700
Jennings	640
Markham	100
Orange	11,150
Pierce Junction	700
Spindletop	845
Saratoga	1,650
Sour Lake	4,810
Somerset and Piedras Pintas	2,600
Vinton	5,375
Welsh and Anse La Bute	90
West Columbia	13,700
Miscellaneous	3,525
Total	85,945

Completions for Week

In the Hull Pool on the east side, the Republic Production Co.'s No. 43 Dolbear was deepened to 3,150 feet and is flowing 1,500 bbls., 50 per cent sediment and water. Same company's No. 75 Dolbear, a new well, is flowing 800 bbls. by heads at 2,735 feet and No. 76 is showing oil in a sand at 2,800 feet. On the southeast side, the Gulf Production Co.'s No. 4 Thomas Fee, a work over, is bailing at 2,800 feet. On the northwest side, the Monarch Oil & Refining Co.'s No. 2 Miller is bailing at 4,285 feet, one of the deepest holes on that side of the dome. The Mecom Oil Co.'s No. 3 Mecom is going on the pump at 3,800 feet. The Yount-Lee Oil Co.'s No. 8 Merchant is bailing at 3,010 feet. The Houston Production Co.'s No. 7 Taylor is a pumper at 3,070 feet and the Higgins Oil & Fuel Co. is putting No. 3 Republic on the beam at 2,125 feet. It came in last week flowing 500 bbls. by heads.

In the Orange Pool, the Gulf Production Co.'s 14 Hager Fee, which came in last week at 4,100 feet, flowing 1,200 bbls. and sanded, has been cleared and is back to 1,200 bbls. per day. The same company's No. 6-A Kishi-Lang on the northwest side of the pool is reported to have drilled into 19 feet of sand at),800 feet. A test will be made. The Gulf Coast's No. 3 Pevito, an old hole, was deepened to 4,090 feet and abandoned. No. 1 Winifree is deepening at 3,335 feet, a test at 3,100 feet showing nothing of value. The Orange Petroleum Co.'s No. 4 Chesson got salt water at 4,017 feet. The Brownie Babbittee Oil Co.'s No. 6 McLean is a pumper at 3,350 feet. The Humble Oil & Refining Co.'s No. 18-B Chesson is bailing at 4,235 feet. The Gulf Co.'s No. 4 O. Chesson is now pumping 135 bbls., having increased from 80 bbls. last week.

In the Goose Creek Pool, the Gulf Coast-Crown Oil Co.'s joint No. 31 Gallaird is pumping 35 bbls. at 2,835 feet. Newton & Gilchrist's No. 4 Gillette was worked over and got salt water at 1,850 feet. The Gulf Production Co.'s No. 27 Beaumont is bailing at 4,520 feet.

In the West Columbia Pool, The Texas Co.'s No. 1 Abrams is pumping 75 bbls. after being worked over. It shows 10 per cent water. It is a record well, coming in originally on July 20, 1920, making 26,000 bbls. It is estimated the well has produced 2,500,000 bbls. to date. Another record well in that pool is the Hyde Production Co.'s No. 2 McGregor, which has been flowing for three years and is still making 200 bbls. daily. It averaged 800 bbls. daily for more than one year. The Gulf Production Co.'s No. 3 Harrison in the Hull Pool quite during the week, after flowing steadily and by heads for three years and seven months.

Blowout in Oil Field

The Schulte Oil Co.'s No. 1 Newman is a gas blowout at 4,150 feet. It is on the west side of the old Markham Pool in Matagorda County and about 1 mile from production. The Rycade Oil Co.'s No. 2 Hudson there on the east side of the creek is drilling at 3,160 feet and it had spudded in No. 1 Gray. A. G. Wolf is starting No. 1 Otis, a wildcat test in that county.

Int the Batson Pool, the Duetser Oil Co.'s No. 1 Hooks is going on the pump. The Paggi Bros. Oil Co. is making another test in No. 3 Lewis in the Saratoga Pool at 1,555 feet. The Texas Co.'s No. 233 Fee in the South Lake Pool is bailing at 2,010 feet. It, too, is a workover. H. R. Cullen is testing No. 3 Ward at Damon Mound, with 26-inch strainer set. The Sinclair Oil & Gas Co. is starting No. 1 Masterson Irrigation Co.

In the Vinton Pool, the Vinton Petroleum Co.'s No. 12 Rescue is a 100-bbl. pumper at 2,150 feet, showing 35 per cent water. The Gulf Coast Oil Co.'s No. 7 is making 100 bbls. on the beam at 2,840 feet. The Gulf Refining Co.'s No. 23 Vincent is a pumper at 3,300 feet and its No. 30 Star is a 5-bbl. well at 2,100 feet. The Vinton Petroleum Co.'s No. 13 Harmony is bailing at 1,815 feet.

In the Edgerly Pool, the Gulf Refining Co.'s No. 19 Bright-Penn was worked over into a pumper at 2,960 feet and the company is rigging No. 32 Bright-Penn to deepen.

Prices Advanced

The Laredo, Luling and Milam County fields are experiencing some of the prosperity that has visited other producing sections of the country. The Magnolia Petroleum Co. and the Texpata Pipe Line Co. advanced Mirando and other Webb County districts to 75 cents. The Magnolia Co. and other buyers also posted 75 cents for Luling crude, an advance of 25 cents. The Owens Refining Co., which buys the crude from the Rockdale-Minerva section of Milam County, has posted $1.35, an advance of 25 cents per barrel.

The Magnolia Co. has five 55,000-bbl. tanks at Mirando City, in Webb County and is now building the sixth tank. In the Luling Field that company has 22 of the 25,000-bbl. capacity and is erecting another. It tops the Luling crude there, selling the residue as fuel oil and shipping the topped distillates to its Beaumont refinery in tank cars.

Wildcat Tests

The Humble Oil & Refining Co.'s No. 1 Kissman, 7 miles east of Kingsville, Kleberg County, is plugging back from 4,500 feet to test a gas sand at 2,200 feet. The Sun Oil Co.'s No. 5 Cade at High Island, Galveston County, is drilling at 3,429 feet, having penetrated over 1,100 feet of hard rock, using two roller bits per day. B. E. Jones is rigging No. 1 Bledso, near Shepherd, San Jacinto County. W. W. Johnson is starting No. 1 Hein in Austin County and The Texas Co. is rigging near Danbury, Brazoria County.

In Bexar County, the Helvetia Copper Co. is drilling No. 8 Smith, the Idaho Oil C.'s No. 4 Kilborn and the Alamo Gas Co.'s No. 3 Stolt. Dale L. Smith is rigging No. 3 Fernandez in Hidalgo County. W. L. McClanahan is starting No. 1 Wiseman in Guadalupe County.

In Bastrop County, the Midwest-Texas Oil Co.'s No. 1 Graza in the northwestern part of the county, is drilling below 2,700 feet. Same company's No. 1 Smith, near Lyton Springs, is shut down at 2,100 feet. The Cardinal Oil Co. is rigging at String Prairie, 10 miles south of Bastrop and the Latain Oil Co. has a derrick up at Red Rock, 8 miles southwest of Bastrop. The Dixie Oil Co. has started No. 1 Litton, 9 miles west of Bastrop and the Carson Petroleum Co. is going into an old hole 4 miles east of the same town.

Luling and Laredo

In the Luling Field in Caldwell County, the United North and South Oil Co. finished three wells during the week, netting a combined new initial production of 2,500 bbls. No. 7 Rios on the southwestern side of the old field came in flowing 1,000 bbls. and No. 1 Proctor came in rated initially at the same flow. No. 1 Stair to the southwest showed 500 bbls. initial flow. It offsets the Jarmon Oil Co. on the Maggie Moore. Late in the week the well was drilled a few feet deeper into the sand and increased to 1,000 bbls.

In the Webb County (Laredo) districts, the Neuvo Oil Co.'s No. 2 was completed at 1,744 feet and is rated at 125 bbls. The Black Panther Oil Co.'s No. 1 in the Aviator section is rated at 100 bbls. at 1,778 feet. The Carnahan Oil Co.'s No. 9 in the Mirando-Schott section missed the light gravity sand at 1,940 feet after deepening and it will be drilled still deeper.

East Central Texas

By Staff Correspondent.

CORSICANA, Tex., Jan. 28.—Several drilling operations have been started and others will be started very soon to test the shallow horizons in the Powell Field. The Empire Gas & Fuel Co. is rigged up on No. 5 Sweatman, Harris survey, located 40 feet east of No. 1 and 100 feet from the north line of the lease. The Kirby Petroleum Co. has made a location 40 feet southwest of No. 1 McKie on the Broyles survey. It will be classified as No. 1-A.

The Gulf Production Co. is drilling below 500 feet on No. 9 Witherspoon-McKie, 165 feet from No. 2 and in the direction of No. 3. The E. L. Smith Oil Co. has a rig up between Nos. 2 and 3 Ramsey, Harris survey, and the Tidal Oil Co. has a rig up between Nos. 2 and 3 Ramsey, same survey.

Other first reports on drilling include the Sims Oil Co.'s No. 10 Rose, Harris survey, drilling at 1,890 feet; Gulf Production Co.'s No. 9 Murchison, Barry survey, drilling at 300 feet, and the same company's No. 6 Smith, Taylor survey, drilling at 1,060 feet. R. E. Brooks has a rig up for No. 2-A Cerf, Smith survey,

Powell averaged 96,000 bbls. a day in production the last week from 634 wells. There was little variation in the production throughout the seven days. The best of the new wells was completed early in the week, the Sims Oil Co.'s No. 4 Boyd, on the Meador survey, which started at 2,000 bbls. from sand at 2,936-70 feet. This well extends production one location to the south in that part of the field. James Smith's No. 1 Woolens, Bennett survey, swabbed 200 bbls. from sand at 2,853-2,965 feet.

The Atlantic Oil Producing Co. completed a failure in No. 1 Goldman, Lockhart survey, at 3,185 feet.

The Humble Oil & Refining Co.'s No. 4-B I. N. Cerf, Smith survey, was good for 200 bbls. from sand at 2,875-2,970 feet.

The Mutual Oil Co. got 600 bbls. initial production from its No. 8 Howell, Matthews survey, from sand at 2,906-31 feet.

The E. L. Smith Oil Co.'s No. 1 Cerf, Smith survey, got sand at 2,880-2,961 feet and a 50-bbl. production, while in No. 5 Ramsey, a shallow test between Nos. 2 and 3 on the lease, was good for 90 bbls. at 1,526-37 feet.

The Sims Oil Co.'s No. 3 Howell, Matthews survey, started at 750 bbls. from sand at 2,885-2,961 feet, but in No. 6 Rose, Harris survey, made only a 100-bbl. initial production of cut oil from sand at 2,890-2,953 feet.

The Texas Co.'s No. 1 Autrey, on the Autrey survey, near Navarro, which was drilled on geological advice, proved a failure at 3,048 feet and was abandoned.

The Kirby Petroleum Co.'s No. 6 Kost, on the Smith survey, was abandoned at 3,035 feet. Salt water developed in sand at 2,920-38 feet.

It has been a dull month in the Powell Field. In addition to the above wells only 48 wells were completed since the close of the December monthly report of operations and of these seven were dry and one a gas well. The remaining 40 wells showed an initial production of 11,573 bbls. A short time ago individual wells were producing as much or more than all the January completions.

There are few wells drilling for the deep sand and the hope of Powell lies in what may be found in the shallower horizons. Production is holding up very satisfactorily. The average production last week was slightly in excess of the average daily production in December, which is a good sign. The East Central Texas area, including Powell, Corsicana, Mexia and Currie, averaged 135,950 bbls. last week, a gain over the week before of 3,000 bbls. a day.

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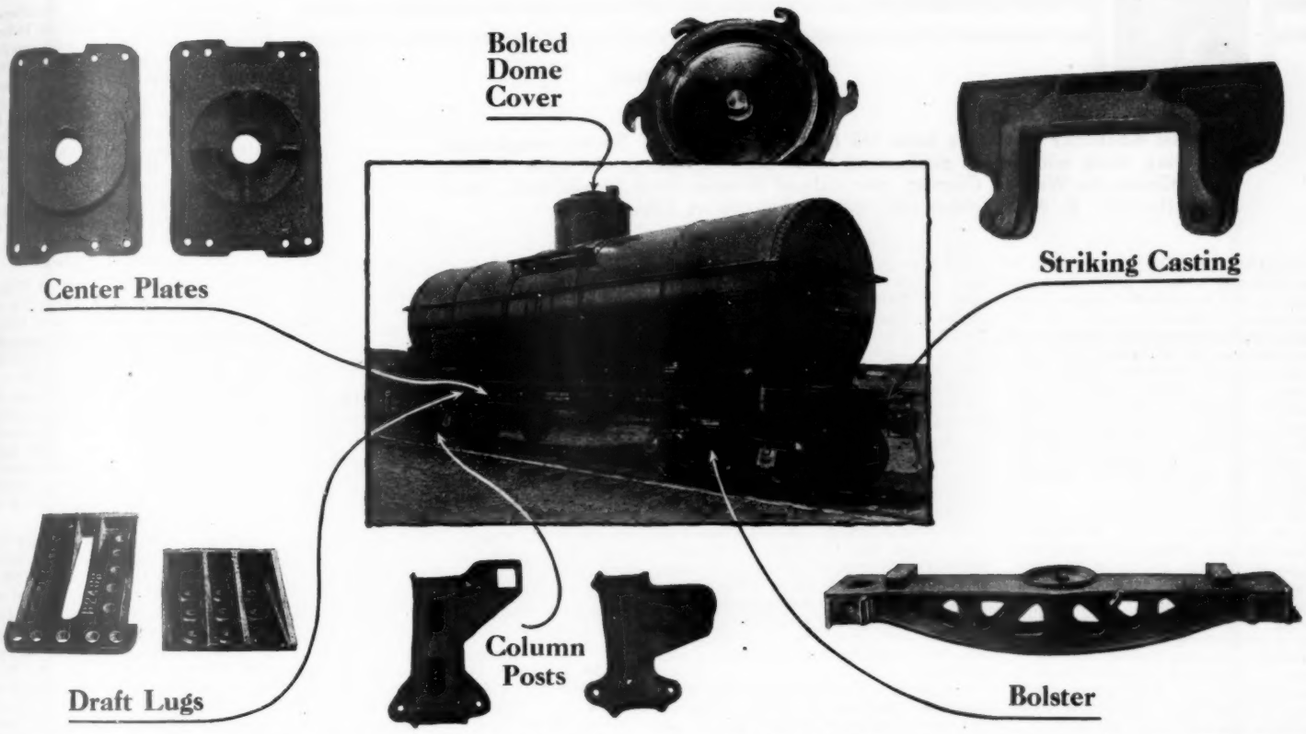

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West Kentucky—Tennessee

By Vern T. Whitney

West Kentucky operators form Oil Producers' League. Seven completions during week with initial production of 30 bbls. Evans & Co.'s No. 1 Arch McGinnis, in Warren County, may extend Francis Pool 1 mile and a half northwest.. T. A. Sheridan gets two producers in Allen County.

BOWLING GREEN, Ky., Jan. 28.—Oil producers of western Kentucky have formed an Oil Producers League with headquarters at Bowling Green. W. P. Simmons, copartner of E. M. Treat, was elected president; C. P. Taneyhill, F. A. Brendall and S. H. Bradshaw, active vice presidents; E. V. Fowler, treasurer and Woodward Kirkpatrick, secretary. The directors are W. P. Simmons, E. V. Fowler, F. A. Brendall, W. Kirkpatrick, Sam Bradshaw, C. P. Taneyhill, J. M. Welles, J. H. McClurkin, N. Garland and William E. Schwartz.

There are 116 rigs on locations in the fields; 30 of wildcat nature. In Tennessee there are 20 machines in 11 counties; in Alabama, 11 rigs are up in 10 counties, while Mississippi shows a total of 21 rigs in 17 counties.

During the week 7 wells were completed, 4 producers with an initial yield of 30 bbls. Warren County showed 1 producer, 1 abandoned hole and 1 duster; Allen County reports 2 producers, while the Cumberland-Monroe district is credited with 1 producer and 1 dry hole.

In Clay County, Tennessee, 2 wells were finished, one of which made a small pumper. In Pike County, Mississippi, the Gulf Drilling Co., Inc., abandoned its No. 1 Culprit at 3,100 feet; No. 2 is being rigged up.

An increase of 11 rigs is shown in the field, compared with last week's figures, 3 each in Warren and Allen Counties, 2 in Barren and Russell and 1 in Owensboro Field.

Warren County Development

The feature completion in Warren County was the No. 1 Arch McGinnis of Evans & Co. It is 1,000 feet north of the hamlet of Greencastle and extends the production on the Francis lease, in the Sandidge-Biddle-Francis section, approximately 1½ miles to the northwest. This well is estimated at 5 bbls. at 670 feet. It is understood this test will be drilled down to the pay below the shale. Reed & Co. abandoned No. 1 Montague, in the borough limits of Greencastle, at 90 feet.

In the Rockfield-Browning section, southwest of Bowling Green, C. L. Turner got a duster at 550 feet in his No. 3 McLemore; No. 4 is spudding at about 20 feet. The Ruby Consolidated Development Co.'s No. 3 Price-Hall is showing for a good producer in the first pay below the shale at from 1,110 to 1,115 feet, where it filled to the extent of 400 feet, naturally. It is now awaiting a shot. On the adjoining Ben Price lease, Bolling and others are drilling at 1,100 feet. In this same section, Wiles & Co.'s No. 2 G. Smith, 400 feet northeast of No. 1, is making hole at 803 feet. The Jackson Oil Co.'s No. 4 Jim Jones is shut down at 475 feet; the Pennsylvania Oil Syndicate's No. 6 J. F. Young was drilling at 576 feet; the Gillespie Oil Co.'s No. 5 Gillespie, 400 feet east of Bryant No. 1 was progressing at 75 feet; Peter Lavelle's No. 4 W. R. Hunton was rigging up. In the shallow section, the Hunt Oil Co.'s No. 13 Bettersworth was shut down at 212 feet; Roy Hogan's No. 1 Poor Farm was shut down at 350 feet.

In the northeast extension area, E. M Treat & Co.'s No. 18 Sebe Smith, offset to the Gott No. 10 well, is waiting on a shot at 1,017 feet. No. 19 is going forward at 300 feet. This well is being drilled to offset No. 1 Martha Runner. The Wood River Oil Co.'s No. 1 Rufus Oliver is down 105 feet and drilling. The Ohio Fuel Oil Co.'s No. 3 Kelley-Miller, 150 feet east of the Wood Oil Co.'s Garret lease, was drilling at 467 feet. At the mouth of Gasper River, Mossberger and associates are rigging up to drill a test on the Corhon farm. In the Penner sector, south of the northeast extension area, J. J. Fort is moving a rig on the Anthony farm for his second well. No. 1 is pumping 5 bbls. at 428 feet. The Farmers Oil & Gas Co.'s No. 1 Bratcher, one-half mile south of Richardsville, was making hole at 346 feet. This test is being watched by the scouts of the major companies as it will extend the limits of the Waller-Runner Pool and serves to connect it with the Sandidge district if a producer.

In the Sandidge-Biddle-Francis Pool, Makeever Brothers are down about 98 feet in No. 12 Anna Shields; Foster and associates' No. 2 Wood is shut down at 50 feet, and No. 5 C. E. Francis is also idle, due to weather conditions at about 110 feet.

Davenport Pool

The Interior Oil Co. was spudding No. 9 J. L. Jenkins at 42 feet; the White Oak Fuel Co.'s No. 2 Perkins was idle at 680 feet; Clark & Jones' No. 2 Hobson was shut down at 978 feet; M. M. Ennis and others' No. 3 Savage is rigging up.

In eastern Warren County, Williams & Co.'s No. 1 Hawthorne was shut down on account of bad weather as was No. 1 on the John Kirby place at Smith's Grove.

Allen County Work

In Allen County, T. A. Sheridan is credited with both wells completed during the week. His No. 8 Fannie Gibson is reported as a 12-bbl. pumper and No. 9, on the same farm, pumped 8 bbls. They were finished in the below-the-shale sand at approximately 365 feet. Nos. 10 and 11 will be started immediately. Several wells in various parts of the county are on top of the sand and will be completed during the coming week. Several new rigs are starting up and a number of small trades were consummated.

Cumberland County News

The Atlantic Oil Producing Co.'s No. 1 Dowell in the Kettle Creek district, drilled to offset No. 1 Kim Crawford, is reported to have made 5 bbls. on the pump at 490 feet; in this same district, McKee & Co. reported a duster on the Scott farm in the shallow pay.

Bear Creek: The Paragon Development Co.'s No. 1 M. L. Spear was shut down at 1,140 feet; Wilcox Brothers are drilling at 850 feet, 140 feet below the shale in No. 1 Sarah Sheckles, 1 mile east of the Treat well at Modoc.

Sulphur Creek: W. S. Raydure's No. 2 Mrs. Coop is drilling at 400 feet and the second Sunnybrook sand is expected early the coming week; Douglas St. Clair has resumed drilling on his Victoria King No. 1 and is down 550 feet; Combest Oil Corp.'s No. 1 H. Groce, on lower Sulphur Creek, is shut down with a fishing job at 400 feet; Kanawha Oil Co.'s No. 2 Williams is making hole at 100 feet; Combest Oil Corp.'s No. 5 A. Huddleston 210 acres, is fishing for tools at around 560 feet; Morris Petroleum Co.'s No. 3 A. Huddleston 175 acres, is shut down at 540 feet; Hook, Ross & Wise's No. 2 Sam Riddle is still shut down at 680 feet.

Kettle Creek: The Gartland Estate's No. 4 Bud Kerr was making progress at 225 feet; Daniel Boone Oil Co.'s No. 3 Widow Logan, drilling at 225 feet; a small show was encountered in the stray sand at about 165 feet; Banta & Co.'s No. 1 Logan is making hole at 250 feet.

In the vicinity of Burkesville, Wilcox Brothers' No. 1 Simpson is shut down at 510 feet awaiting a new drill stem; Combest Oil Corp.'s No. 1 Anderson, at Galloway Creek, is rigging up; on Big Renox Creek, the Shady Side Co.'s No. 1 C. Strange is shut down at 700 feet.

Monroe County

The success of the operators in the Old Railey Pool, for a time built up the hopes of the lease holders of that section but on account of a misunderstanding between the operators and the land owners, operations came to a standstill. It now looks as if the trouble has been adjusted as the well is being put on the pump and will be tested.

Dan Kavanaugh of New Martinsville, W. Va., and H. A. Kiser of Scottsville, have taken over a block of acreage in the vicinity of the Railey well and are moving a rig from Scottsville to start their initial test.

Stumb & Stumbo have a machine on their location on the Jarrett Dickerson farm at Bushong, 3 miles north of Tompkinsville, but have been delayed in getting the hole started by bad roads. Drilling has been held up on the J. F. Kidwell lease, being developed by Fred Hensgen, on account of litigation over the title. The Star Oil Co.'s No. 1 Jerry Humble, on Big McFarland Creek, is shut down at 600 feet. On the J. B. Chappell lease, near Otia Landing, W. G. Bowles and others are making progress at 400 feet in their initial test.

Tennessee News

The Lindsay Syndicate of Nashville, Tennessee, is drilling a test 1½ miles northwest of the city limits of Nashville, in Davidson County. It is on the Sadie Hyde Stevens farm at Hyde's Ferry Pike and close to the T. & C. Ry.

This test started in the lower Mississippi lime, below the shale. At 171 feet a black lime was encountered and at 350 feet the drill went into a cream lime. It will be carried to 2,200 feet unless oil is found in paying quantities. According to calculation's the Trenton will be found at approximately 1,600 feet.

In Clay County, Da Foe and others' got a 3-bbl. pumper in No. 3 Williams, at Tinsley's Bottom, at around 700 feet. It was drilled 1,500 feet north of No. 1. No. 4 is drilling at 100 feet. On the Marcum 48 acres, at Willow Grove, Hunt & McQuarry's No. 1 was dry at 500 feet. In August, 1922, a 1,000-bbl. well was found on part of this farm by Alexander & Co. of New York. These parties have since drilled two dusters offsetting the big well. They are now drilling on No. 4, 350 feet east of the big well, at around 980 feet.

Pennsylvania-West Virginia

By D. S. Wakenight

PITTSBURGH, Pa., Jan. 28.—All completions in the West Virgina fields are light pumpers, gas wells or dusters. The gas wells outnumber the oil producers, two to one. In Carroll district, Lincoln County, G. T. Ray & Son have a Big Injun sand gasser at a second test on the Cana Steward farm. In Liberty district, Marshall County, the Manufacturers Light & Heat Co.'s second test on the Frank Chambers is a gasser in the Gordon sand. The Carnegie Natural Gas Co.'s second test on the L. Carmen farm in Clay district, Wetzel County is a gasser in the fifth sand. In the same district, Guy Patterson has a gasser in the Big Injun sand at No. 5 on the William Davis farm. In Geary district, Roane County, the United Fuel Gas Co. got a gasser in the same formation on the R. K. Ogdin farm. The Hope Natural Gas Co.'s test on the Ella Eisman farm in Washington district, Calhoun County, is a gasser in the same sand. In Curry district, Putnam County, the Monarch Gas Co. completed a Big Injun gasser on the Painter farm. In Union district, Lincoln County, C. C. Wolf got one of the same kind at No. 3 on the Fred Adkins farm.

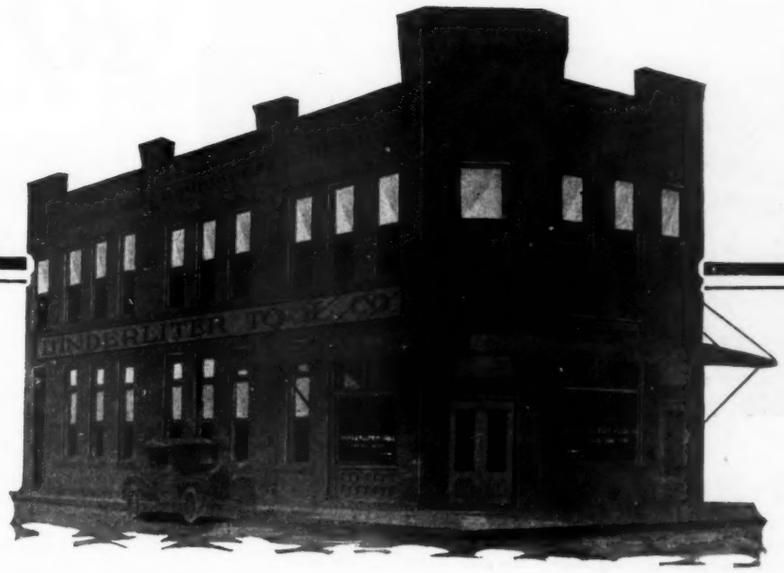
Ritchie County Most Active

Ritchie County is completing more wells than any other in West Virginia. In Union district, C. E. Braden & Co., drilled a second test on the S. C. Moats farm through the Big Injun sand and dry. On Indian Creek, Murphy district, J. F. Deem & Co. got one of the same kind when they drilled their test on the William Deem farm through the salt sand. In the same district, on Lambs run, A. H. Smith has the rig completed on the H. F. Andrews farm. Ritchie County has more than 20 rigs up and wells drilling. On Walnut run, McElroy district, Tyler County the Manufacturers Light & Heat Co. drilled its old No. 1, formerly a gasser on the Alphias Tennant farm, to the Gordon sand, a duster. At Metz, Mannington district, Marion County, William Haught & Co.'s test on the F. M. Renner farm is a gasser in the Gordon sand. In Grant district, Harrison County, the West Virginia Central Gas Co. has a fifth sand gasser at a test on the F. B. West farm. In Union district, the Hope Natural Gas Co. has a gasser in the Benson sand at a second test on the B. F. Trash farm.

Wirt County

In Burning Springs district, Wirt County, O. E. Graw has completed and shot in the first Cow Run sand No. 15 on the Rose Whitecotton farm, not good for more than 2 bbls. a day. In the same district, Roberts Bros. are testing and trying for a producer in the Big Injun sand on the Charles Hopkins farm. In Elizabeth district, Parks & Dailey have a duster in the Maxon sand on the Edward Evans farm. On Leading Creek, Sheridan district, Calhoun County, the Ritchter Oil has a salt sand gasser at No. 3 on the B. S. Raybuck farm. In Reedy district, Roane County, the Heck Oil Co.'s test on the Simms heirs' farm is through the Berea grit, a gasser good for 1,000,000 feet a day. In the old Cave Run gas pool in Lafayette district, Pleasants County, Neely & Co. drilled a second test on the Amos Smith heirs' farm through the Maxon sand and dry. It will be drilled to the lower sands. In the same district, the Eleanor Oil & Gas Co. is due in the sand on the B. D.

(Continued on Page 140)



HINDERLITER TOOL COMPANY

announce

the opening of

Their New Store and Warehouse

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Stroud, Oklahoma

SALES
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HINDERLITER TOOL COMPANY

Manufacturers of and Specialists in Drilling and Fishing Tools
TULSA, OKLAHOMA
Branches in Principal Oil Fields

102

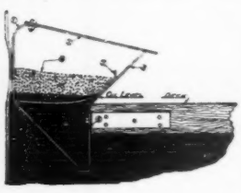
This Cannot Happen To Tanks

Photograph at the left shows a 55,000 barrel tank, owned by the Southern Pacific R. R. Co., after a fire had burned a third of its contents and melted down two rings of the wall before extinguishers took effect.

Photograph at the right shows the same tank re-conditioned and equipped with a Safvety Floating Tank Deck, never again to burn or lose its contents by evaporation.

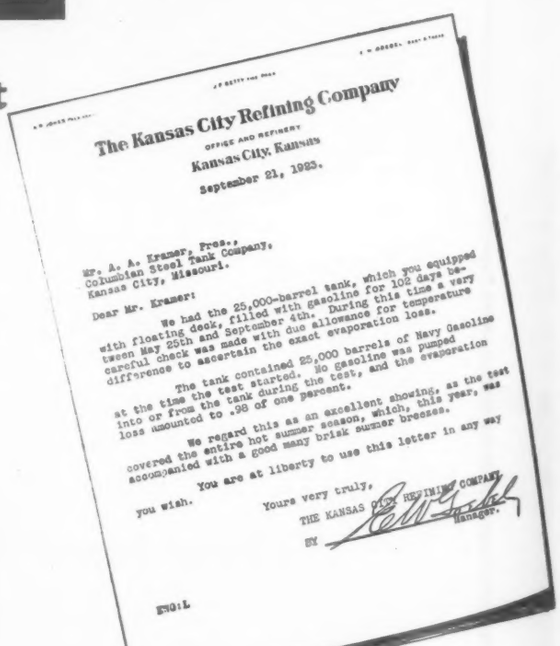
Gravity Seal—No Springs—Permanent

THE main structure of the Safvety Floating Deck is slightly smaller than the diameter of the tank. The rim of this extends above and below the deck. The space between deck and tank wall is connected with a flexible steel basket, (see illustration). Gravel in the bottom of the basket (3) by gravity keeps member No. 1 crowded out against the tank wall at all times. No. 1 is hook hinged to No. 6 and No. 3 is hook hinged to No. 1. No. 3 slides in and out on No. 5 which is higher than displacement. No. 2 sheds water onto the main structure. *This flexible basket is fully covered by patents and is the original floating deck invention.* The momentum for its automatic operation is furnished by nature's gravity pull. *It is not dependent on springs for operation and it is made of steel with a life as long as that of the tank.* It represents the difference between success and failure in a floating deck.



Automatic Folding Drain Pipe

THE illustration at the right shows the Automatic Drain Pipe through which rain or snow falling on the area of the Safvety Floating Deck is carried off. This pipe is swivel jointed and folds or extends with the raising and lowering of the deck. A check valve is located on the inside of the drain well and on the intake end of the drain pipe. This is a safety feature to prevent oil from flooding the deck in the event of a break in the drain pipe. The opposite end of the drain pipe has an automatic check valve which closes this end in the event of a break. *This patented drainage system is of prime importance to Floating Deck success.*



The Kansas City Refining Company
OFFICE AND REFINERY
Kansas City, Kansas
September 21, 1923.

Mr. A. A. Kramer, Pres.,
Columbian Steel Tank Company,
Kansas City, Missouri.

Dear Mr. Kramer:

We had the 25,000-barrel tank, which you equipped with floating deck, filled with gasoline for 102 days between May 25th and September 4th. During this time a very careful check was made with due allowance for temperature difference to ascertain the exact evaporation loss.

The tank contained 25,000 barrels of Navy Gasoline at the time the test started. No gasoline was pumped into or from the tank during the test, and the evaporation loss amounted to .96 of one percent.

We regard this as an excellent showing, as the test covered the entire hot summer season, which, this year, was accompanied with a good many brisk summer breezes.

You are at liberty to use this letter in any way you wish.

Yours very truly,
THE KANSAS CITY REFINING COMPANY
BY ..... Manager.

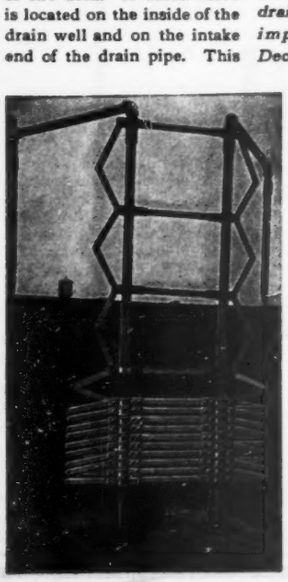
ENG:L

Prevents Evaporation

WITH a 25,000 barrel tank, equipped with a Safvety Floating Tank Deck, and filled with Navy Gasoline, the Kansas City Refining Company, Kansas City, Kansas, conducted an evaporation test over a period of 102 days of hot summer heat.

Above is reproduced in fac simile a letter from Mr. E. W. Goebel, Manager, in which he describes the conditions of the test and the results. Just read what he says.

The evaporation loss was less than 1 per cent. The same size tanks equipped with canopy decks and in much more favorable weather showed an evaporation loss of 5 per cent and better. The difference between these two losses, reduced to gallons and figured 10 cents per gallon, amounts to nearly $5,000.00. Almost enough saved in a little over 3 months to pay for the floating deck. Repeated four times a year rather handsome dividends accrue—dividends that are escaping into the air from thousands of other tanks.



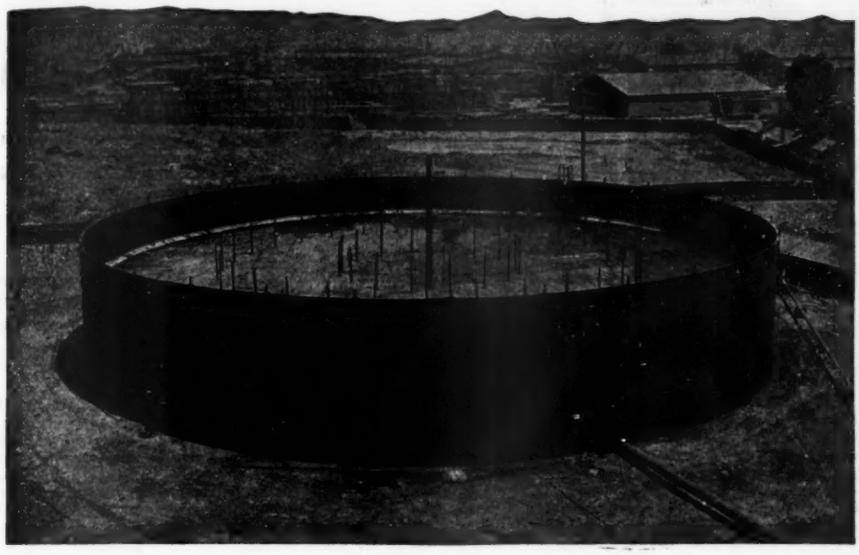
Automatic Folding Ladder

SINCE the Safvety Floating Deck raises and lowers with the level of the oil in the tank a ladder is necessary for easy access. The Automatic Folding Ladder shown at the left is standard equipment. This unique, *patented ladder* folds and unfolds its steps with the raising and lowering of the deck. The telescoping steps slide on two pipes anchored at the top and bottom of the tank and passing through sleeves in the deck.

Not An Experiment

Years have been spent in the development and perfecting of the Safvety Floating Tank Deck. It is not an experiment. Scores of installations have proved its success. Every detail has been worked out to a nicety.

Equipped With The



Safvety Floating Tank Deck

PREVENTS OIL TANK FIRES *and* EVAPORATION

IT floats on the surface of the oil. No air space is left between deck and oil in which vapor can form. Crude and its fractions are not combustible until vaporized. That is why a tank of oil under a Safvety Floating Tank Deck cannot be ignited. That is why the Safvety Floating Tank Deck prevents evaporation. The principle is as simple as A B C. The problem was to perfect a deck adaptable to all tanks.

The Safvety Floating Tank Deck fits all tanks—those with packed bolted seams, those with riveted and calked seams, those with welded seams, those with bulging walls and those with walls out of plumb. Its outer rim is automatically flexible to clear all irregularities. It adjusts itself to the exact shape of the tank while at all times maintaining a snug seal against the tank wall.

It is a permanent structure of steel—not a liquid seal. It is a self-contained tank deck. One of its patented features provides ample drainage of rain and snow fall. No canopy deck is required. Since it floats on the oil it is not exposed to injurious gases. It has exactly as long a life as the tank.

An ounce of prevention is better than barrels of extinguisher. Canopy decks and the fire extinguishers performing at their conceded best do not prevent damage, loss and waste when fire breaks loose. The same investment in Safvety Floating Tank Decks will not only prevent tank fires but evaporation as well.

Write for Complete Catalog

—reproducing results of actual tests, photographs of installations, letters from users, detailed plans of construction and full descriptions. Before re-decking any of your present tanks or specifying decks for new tanks, consider the Safvety Floating Tank Deck. Write today.

Boil Gasoline Without Ignition

HERE is reproduced an actual photograph of a tank, equipped with a Safvety Floating Deck, enveloped in a raging fire. It contains California crude on top of which was placed 30 gallons of gasoline. The debris around the tank was saturated with gasoline and set afire. Three hours elapsed from the time the torch was applied until the debris was consumed. Three hours of red hot fire—*not just a torch held above the deck.* The boiling of the oil in the tank could be heard for a distance of 50 yards. At no time did the contents of the tank ignite.

Not just this one, but many actual fire tests have demonstrated the merits of the Safvety Floating Deck as a preventor of fire and evaporation. During another test at Kansas City, eggs were hard boiled in the oil. A much more severe test was conducted by the Southern Pacific R. R. Co. under the direction of Mr. Harry Pollard, Chief of their Fire Prevention Department with results that persuaded them to install a Safvety Deck on the 55,000 barrel tank shown above.

Manufactured by

COLUMBIAN STEEL TANK COMPANY

ESTD 1894

MID-WESTERN 10TH STREET KANSAS CITY, MO.

Under an exclusive license agreement for the United States with the patentee

Tulsa, Oklahoma
Owasso & Frisco Tracks
Dallas, Texas
210 Southwestern Life Bldg.

Casper, Wyo.
321 Moose Bldg.

Los Angeles, Calif.
806 Wright & Callender Bldg.
San Francisco, Calif.
564 Market Street

Partition Mounted, 3-Point Supported Truck Tanks.

Vapor Proof Bolted Steel Tanks for Field and Refinery

Vapor Pressure and Vacuum Valves.

Floating Decks for Tanks, Vapor Proof, Fire Proof

Horizontal and Vertical Storage Tanks, Welded.

Underground Storage Tanks, Welded.

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Gasoline and Oil Pumps.

Carrying Cans, Barrels, Buckets, Funnels and Faucets.

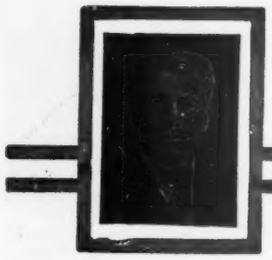
Truck Dump Bodies, Hand Hoists and Winches.

Garages and Portable Buildings.

Steam Condensers.

Tanks for the Farm, Grain Bins.

Plates, Sheets, Angles, Channels, etc.



Wyoming Field Operations

By F. B. Taylor

Activities begin on North Casper Creek Anticline. Midwest Co. completes three producers in Salt Creek Field, 460, 300 and 250 bbls. Plans to drill 28 wells in Salt Creek under way. Union Co. spuds in two at Fort Collins, Colo. Cat Creek Field expecting development.

CASPER, Wyo., Jan. 26.—The North Casper Creek anticline, lying about 30 miles west and a little north of Casper, is becoming active. The Midwest found gas here at about 900 feet last fall and shut down the well and at present the California Oil Co. of Wyoming is moving in a rig to put down a well. The New York Oil Co. is also moving in and the Arkansas Natural Gas Co. has started rig building. The structure covers about 8 square miles and lies in Township 36, Range 82.

In the Salt Creek Field, the Midwest Oil Co. found a producer of 460 bbls. at 1,824 feet on Section 25-40-79, and also brought in a well good for 300 bbls. on Section 22-40-79, finding the second Wall Creek at 2,385 feet. The Midwest also found a good well at 2,460 feet in the second Wall Creek that will make 250 bbls. on Section 26-40-79.

The Sheldom Dome well No. 2 of the Marine Oil Co., about 50 miles north of Riverton, is shut down with frozen water supply at 3,200 feet. This is the second test drilled on that structure; the first well is making some gas and about 15 bbls. daily of crude.

The deep test in the Big Muddy Field, being drilled by the Mutual Oil Co. is having trouble. It is to be put down to the Dakota sand expected about 4,000 feet and is around 3,800 feet. It was drilled with a rotary outfit and then cable tools substituted for drilling in. The well has a parted string of casing with about 1,100 feet at the bottom of the hole and this fishing job is holding up completion. There is but one well to the Dakota formation in the Big Muddy Field, the Midwest well drilled about two years ago, which is a producer.

Salt Creek Program

The Midwest Refining Co. made 14 new locations the past week in the Salt Creek Field, the Ohio Oil Co. made 10 and the Mutual Oil Co. made 4, all to be started soon. This is thought to be the commencement of the season's drilling campaign for 600 wells in Salt Creek. At present there are about 800 wells producing. The Midwest expects to drill about 4,000 wells in Salt Creek to obtain all the oil under the lands the firm controls. The Midwest now has about 60 strings of cable tools available, being by far the largest owner of tools in the field.

The wildcat drilled at Debeque, Colo. by the Continental Oil Producing Co., was shot the past week. The shot was made with solidified stock and proved successful, increasing the gas flow, but the oil content did not increase as expected.

The Union Oil Co. is preparing to spud in two wells in the Fort Collins district. At present the firm has the big gasser there and one well drilling.

The Hatfield Oil Co. that recently drilled in a big gas well on the Eight Mile Lake structure south of Rawlins, in Carbon County, held its annual meeting at Rawlins and reelected the board of directors. It is drilling another well near the big gas well and another hole is to be started.

Rotary Operations

The Curtis rotary string that drilled two wells for the Midwest Refining Co. in Salt Creek is shut down with the well completed last week being drilled in by cable tools and the rotary crew being sent to the Grass Creek Field to complete a well there that has been shut down for some time waiting on the Salt Creek well. The Golden Eagle Rotary is nearing completion also on the dome of that name in the Big Horn Basin country. Other locations have been made and are ready for these strings.

Another suit has been entered arising from conflicting claims to tracts in the Salt Creek Field. This time it is the Garland Oil Co. against the Wyoming Oil Fields Co. and the Central Wyoming Oil & Development Co. The Garland claims its title rests on the placer claims staked in 1908 and antedated that of the other two firms which are Midwest subsidiaries. The tracts lie in Section 26-40-79, in the heart of the field.

The Utah Oil & Refining Co., drilling on the Woodside Dome, in Emery County, Utah, is drilling at 3,265 feet in shale. This well mudded off a good gas pressure about 3,120 feet and also some oil and water a little deeper.

The well of the Sage Creek Petroleum Co. on the Buffalo Basin Dome in the Red Desert country is on fire and blowing wild. It is thought to have caught from some visitor carrying a light as no one of the crew was near the well. It has been shut in for several months waiting on warm weather. The location is about 50 miles from any supply point, and the country is bare and desolate and covered with snow.

Runs From the Field

Runs from the fields for the past week were as follows:

Salt Creek	116,500
Teapot	3,435
Big Muddy	3,360
Grass Creek	3,170
Elk Basin	1,325
Greybull	145
Rock River	3,250
Lance Creek	1,500
Poison Spider	300
Osage	625
Hamilton Dome	525
Lander	380
Pilot Butte	75
Lost Soldier	5,825
Ferris	150
Cat Creek	4,635
Sunburst	375
Miscellaneous	690
Total	146,265

Craig Well Makes 1,000 Bbls.

The Texas Co.'s wildcat at Craig, Moffat County, Colorado, reported as in the Dakota sand about a foot, flowed 350 bbls. in two hours one day last week. Conservative estimates place the well's production at 1,000 bbls. daily, when it is placed on a steady production basis.

This means a new field in Colorado for the well could hardly be productive at that capacity without sufficient oil behind it to warrant a commercial field. The well is located on Section 35-5-91. When the sand was struck and the tools pulled out, the hole filled up about 250 feet while the bailer was running. The hole stood one hour and filled up 2,500 feet with oil and was then shut in until it was opened a few days later and flowed.

The geology of the area around Craig is the top of the Cretaceous surfacing in many spots, and Tertiary overlay covering the Cretaceous over a large part of the area. The scouts report that geologists now in the area say there are many structures of rather nominal size and it may be likened to the Fort Collins district in this respect. Hamilton Dome, where the discovery well is located, is not thought to be a very large structure but is supposed to cover about 6 square miles of productive area.

This new oil district lies on the west slope of the Rocky Mountains in a beautiful region surrounded by high mountain ranges. It is an ideal place for oil operation except that during the winter months snows and low temperatures hinder the work.

Some speculation is being indulged in as to where The Texas Co. will send the crude. From the opinions of several oil operators it would seem most economical to place a refinery in that region to handle the crude rather than attempt to haul it out by rail as the freight overhead would be very heavy. The Texas Co.'s nearest refinery is at Casper. The Craig well lies about 100 miles from the Parco refinery of the Producers & Refiners Corp. at Parco, Wyo.

Fort Collins Well

In Colorado the well of the Union Oil Co., drilling on the Fort Collins structure is still in the big hole at shallow depth. This well is not expected to reach the Frontier or Dakota formations before the summer. The matter of giving franchises to corporations to furnish gas to Denver and other nearby cities, applied for by several new firms is being carefully considered by the officials, who are examining the backing of the firms in an effort to ascertain whether they can carry out the programs put forth in the applications for charters or whether it is merely a trading proposition to be later turned over to some other company for a consideration.

Sunburst's Holdings

The recent statement of the Ohio Oil Co. taking over the Sunburst Oil Co.'s holdings in the Sunburst Field in Montana, detailed the acquisition by the Ohio of about 3,000 acres from the Sunburst on an operating agreement. The Sunburst holdings, however, include a much larger amount of land in that field and at present this firm has a working agreement with the Ohio covering 4,400 acres of land with 30 producing wells on same and about 500 locations yet to drill.

Besides the above, the Sunburst Oil Co. also has 5,000 acres of practically proven land in the field and holdings totalling 13,520 acres adjoining the proven area. The total value of the Sunburst Oil Co.'s holdings are estimated as worth $20,000,000, which includes holdings of the Sunburst in the Hager Stevenson Oil Co. of $625,000; the Stevenson Associated Royalties Co. of $1,925,000 and the Sunburst Consolidated Royalties Co. of $1,475,000, besides the value of the Sunburst's own properties estimated at $15,975,000.

The Cat Creek Field in Montana is expecting considerable development the coming season. The Homestake Oil Co. has 11 wells provided for in its budget for this year and the other companies are reported planning for extensive drilling campaigns on their holdings.

The Wind River Canyon road has been officially opened and cars can now pass from the central Wyoming region to the Big Horn Basin and on into Montana without crossing the high passes. This road runs through the canyon on the opposite side from the Burlington railroad tracks and at places the walls of rock tower upwards for a half mile or more from the side of the road, then for still greater distances sloping to the tops of the mountains.

Montana has had a run of dusters the past few days. The Midwest has abandoned the test on the Dutton structure in Teton County at 2,265 feet and the Cascade Oil Co. has drilled through the Madison lime in Cascade County and the hole was stopped at 2,880 feet. The Bitter Creek Oil Co., drilling a wildcat in Yellowstone County on what is termed the Blue Creek Dome is down 2,210 feet and the Carter Oil Co., drilling in Chouteau County, has abandoned at 2,700 feet. The Montana Giant Oil Co., in Teton County, on the Chouteau structure, has abandoned at 3,232 feet and the Homestake Exploration Co. on the Malta Dome, Philips County, has abandoned at 2,385 feet.

The Bradford Wyoming Oil Co., drilling a wildcat well on the Emigrant Gap Dome about 20 miles west of Casper, is reported in the Tensleep sand 11 feet and nothing showing. This structure is well defined and looked good for black oil production at an early stage of the development here but four other wells were put down and proved dusters.

MEXICO FIELDS

By George Blardone

TAMPICO, Mex., Jan. 25.—Probably the most important completion in the past few days in Mexican fields was Mexican Petroleum Co.'s No. 1, Lot 1, Cacalilao, which at the shallow depth of 1,779 feet is rated good for 4,000 bbls. This fraction of the Lot 1, is a wide tract directly north of the Rich Mex Oil Co.'s prolific fraction 4-B, separating this eastern part of Lot 1 from Paciencia which lies yet farther north. The well might be classed a wildcat. Mexican Petroleum has also finished two wells over in Ebano, No. 17 Chijol being rated 500 bbls. at 1,604 feet, and No. 31 La Dicha is rated 3,000 bbls. at 1,700 feet.

The International Petroleum Co.'s No. 16 Tanchicuin is another well good at 2,060 feet, being rated for 3,500 bbls. International seems to have more luck in this sector to the west of the older Panuco than anyone else who ever tried it. Rich Mex Oil Co.'s No. 20, Lot 1, Cacalilao, is a 1,500-bbl. well at 1,971 feet; and the same is true of Transcontinental Petroleum Co.'s No. 41, in Lot 4, the latter finishing for the same production at 1,950 feet. Transcontinental's old No. 4, in Lot 4, which came in a big gasser in the fall of 1922 at 1,720 feet, bridging itself badly, proceeded to "uncork" the other day after it had been relegated to the discard. It started off after blowing everything clear at around 12,000 bbls. In a short while it was shut in to await coupling up to the line. There were a few minor completions here and there but they were of little moment.

In the South Fields, the only well worth mentioning is Agwi Companies' (Atlantic Gulf Oil Corp.) No. 17-A, Lot 157 Chinampa, which came in for some 7,000 bbls. for a potential "head" at 2,159 feet. If this well holds up it will cheer the Agwi people considerably, as their wildcats thus far have not been successful. They are rigging to drill another test in the Laguna de Tamiahua now.

All rigs and pump stations in the South Fields are shut down for the time being.

GEORGIA GASOLINE PROBE

ATLANTA, Ga., Jan. 28.—Attorney General George M. Napier has started an investigation into the two recent increases of 2 cents in the retail price of gasoline in Georgia. He also declared that he was investigating complaints of discrimination in the prices made to filling stations by certain distributors of gasoline.

this sleeve—

Manufactured under the Guiberson-Richard patent of Mar. 14, 1916. No. 1175298

Prevents oil or gas pressure from setting slips when running in. Catcher can not hang up in the fluid.

Prevents meddling or tampering with the spring.

Has sufficient outlets for sand, etc.

May be used or not at your option.

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OIL WELL PATENTED DUNN TOOLS

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Can Be Purchased or Rented in Any Field

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SWAN PATENTED UNDERREAMER — THE TOOL THAT NEVER FAILS — ECONOMY EFFICIENCY

BRIDGEPORT BRIDGEPORT BRIDGEPORT

CALIFORNIA FIELDS

(Continued From Page 58)

and the latter with 900 bbls. during the first full day's flow. No. 2 Binkley is a deep well producing from 5,150 feet, while No. 1 Fee is flowing from 4,914 feet. The output from the former, flowing through a 1-inch bean under a pressure of 430 pounds, tests 28.6 degrees while the production of the latter, also flowing through a 1-inch bean, shows a pressure of 290 pounds and tests 27.4 degrees. No. 1 Fee is located on property owned by the Shell Oil Co. in fee and it is so designated to distinguish it from wells located on leased property.

W. R. Ramsey finished a good well during the week, his No. 2-A Municipal being listed as a 1,350-bbl. completion. It was drilled to 4,981 feet and is producing clean 28.3 gravity oil through a 1¼-inch bean under a pressure of 200 pounds. The A. T. Jergins Trust finished drilling what will undoubtedly be the deepest test on the northwest side of the hill, well No. 9 located on property leased from the city of Long Beach. The Golden Eagle Oil Co. also finished drilling a rather deep well and set a 4½-inch oil string at 5,006 feet in its well No. 1. The cement is being drilled out and if a water shut off has been secured it will be only a short time until it is put on a production test. The Conductors Oil Co. and Moore-Tobias have resumed drilling their wells after an idleness of several months and will carry them down in search of deep production.

The Petroleum Midway Co. finished two wells during the latter part of the week and as a result increased its daily production 3,100 bbls. The company's successful completions were well No. 1 on Griswold lease No. 2 and well No. 2 on Foster lease No. 2. The former, drilled to 4,861 feet, responded with an initial output of 1,700 bbls. of 28.9 gravity oil while the latter, completed at 4,871 feet, flowed 1,400 bbls. of 27.8 gravity oil during the production test. Both wells are flowing through ⅞-inch beans. The last well brought in was the Virginian Oil Co.'s No. 1, drilled to 4,706 feet. It registered an initial output of 610 bbls., the oil being clean and testing 26.8 degrees.

Santa Fe Springs

Production still continues to decline at Santa Fe Springs and it is also noticeable that the number of completions is gradually beginning to get smaller. Last week there were only five wells put on production with an aggregate initial output of 2,154 bbls., while during the current week the number of completions totaled 6 and the new production, 1,817 bbls. The Shell Oil Co. completed the largest number of new wells during the week, three of them being on its Slusher lease and one on its Golay lease. No. 7 Slusher, drilled to 4,635 feet, was good for 95 bbls., while No. 9 Slusher, drilled to 4,601 feet, made 420 bbls. during a production test. No. 10 Slusher was finished at 4,630 feet and showed an output of 515 bbls. No. 12 Golay was finished at 4,546 feet and although it came in and flowed for two days at the rate of 300 bbls. daily, it sanded up. It has the makings of a 200 or 300-bbl. well and will probably be returned to production within a short time. With the exception of the Shell, which experienced an unusual week, the General Petroleum Co. was the largest contributor to the list of completions. The latter company brought in two wells, No. 15 Santa Fe and No. 16 Santa Fe. The former was drilled to 4,650 feet and registered an initial output of 447 bbls. of 32.3 gravity oil with a cut of 1 per cent. while the latter was finished at 4,535 feet and showed an initial production of 290 bbls. of clean 31.1 gravity oil. No. 16 Santa Fe started off as a gasser, but within a short time settled down to the production recorded. The Petroleum Midway Co. was so disappointed with the outcome of No. 2 Steinly that it was not even listed as a partial completion. The best the well would do on the pump was 30 bbls. of fluid from 4,575 feet, over 55 per cent of which was water. The company finished No. 7 Mattern, however, at 4,600 feet and is expected a much more satisfactory well than No. 2 Steinly turned out to be, when it is finally connected up. The Standard Oil Co. also finished a small well, its No. 10 Walker, finished at 4,543 feet, only showing an initial production of 50 bbls. on the beam. The oil tests 29.3 degrees and shows a cut of about 10 per cent. The same company's No. 1 Houghton is still dry at 5,350 feet and will probably be abandoned as a duster within a short time. The Associated Oil Co. put No. 12 Clark on a production test, but when it made only 30 bbls. the company decided to clean it out in the hope that the output would increase.

Huntington Beach

Drilling operations at Huntington were productive of only a few small wells during the past week and this condition will probably continue for several months, at least until the Standard Oil Co. begins to drill up its large amount of acreage. Most of the current completions were affected by water and in one case the outcome would seem to convey the impression that water wells were being drilled. The Petroleum Midway put its No. 1 Bray on a production test and secured a daily production of 20 bbls. of fluid, over 90 per cent of which was water. The company also had water trouble with No. 5 Towers, although the initial production of this well did not show as large a cut as that from No. 1 Bray. The Shell Oil Co. finished one new well and recompleted another after redrilling and deepening it. No. 2 Slater, the company's new completion, was first drilled to 5,252 feet where it ran into bottom water. It has been plugged back to 5,035 feet, but it is evident from the initial output that this bottom water has not been successfully excluded. The well made 90 bbls. of fluid during the first day but the oil, testing 15.2 degrees, showed a cut of over 50 per cent. The company's No. 4 Davenport, a former producer, was also put on a test after being plugged back, but in this case the company secured a good water shut off. It was originally drilled to 4,387 feet and later plugged back to 3,682 feet, from which depth the present daily production of 167 bbls. is being pumped. The oil tests 22.8 degrees and shows a cut of 3 per cent. Because of water trouble the Shell is plugging back several wells on its Ashton lease and will probably return them to production within the next month or so. No. 3 Ashton has been plugged back from 5,035 feet to 3,751 feet, while No. 6 Ashton has been plugged back from 5,211 feet to 4,975 feet. The Ashton zone in this vicinity has been practically exhausted and it will undoubtedly prove far more economical to plug back to the upper zones and pump a smaller amount of clean oil. The Fred. B. Foster Co. finished its No. 51 during the week with a 4½-inch oil string landed on bottom at 4,653 feet and successfully put it on production. A 100-bbl. pumper was secured, the oil testing 23.9 degrees and showing a cut of 6 per cent. The Oregon-California Oil Co. recovered a bailer lost in its well No. 1 some time ago and is proceeding to make a water test at 3,786 feet.

Compton

Developments at Compton during the past week were disappointing from one standpoint and encouraging from another. Operators seem to be a little disappointed in the outcome of the General Petroleum Co.'s No. 1 Gardena, but in view of the existing conditions the status of the well is as good as could be expected. There seem little doubt but that the General Petroleum will secure a producer in No. 1 Gardena, but there is some question as to how large the initial output will be. It might be stated in this connection that the showings in this well have been much better than those secured in the Union's latest well, No. 3 Callender, or its predecessor, No. 1 Callender, the discovery well.

The General Petroleum's second well in this field, No. 1 Austin, has passed the 2,000-foot mark and is drilling ahead. The Chase Oil Co. made no progress during the week, a stuck drill pipe holding up work. The Shell Oil Co.'s No. 1 Reyes is drilling ahead at 3,600 feet and should pick up the Callender sand around 3,800 feet within a short time. No. 2 Reyes shows 600 feet of hole, while a grade is being made for No. 1 Childs nearby. The Julian Petroleum Corp. is still held up with a fishing job in its No. 1 Pico Murphy and it will probably be some time before more hole is made as only a day crew is working on the job. The Union's two producers are holding up fairly well and good progress is being made in No. 1 Carson and No. 1 Hellman, the former making hole at 3,924 feet and the latter at 3,420 feet.

The Oak Ridge Oil Co.'s promising wildcat near Bandini, No. 1 Rossi, is still in an unsatisfactory condition.

H. L. Whiston's Montebello wildcat was put on a production test a week or so ago and although it pumped at the rate of 200 bbls. of fluid a day it could not maintain this output. It will be washed out and another test made and if unsuccessful it will be deepened in the hope of picking up another sand. There is a very persistent rumor that the Pan-American has picked up an oil sand in its El Segundo wildcat, No. 1 Pacific Southwest, at 3,675 feet and, although company officials will neither affirm nor deny the rumor, the fact remains that a string of 8¼-inch was cemented a week or two ago. The Standard Oil Co. is setting a string of 11-inch in its Anaheim wildcat, No. 1 Wagner, which has reached a depth of 4,162 feet, to prevent the hole from caving. There have been no showings of importance to date, but something may be picked up before another thousand feet of hole is made. It is reported that the Marland Oil Co. operating in California under the name of the Coast Land Oil Co., will start a well in this vicinity on the Lane property secured several months ago.

Field Operations

Oil field operations reported to the State Oil and Gas Supervisor during the past week show 33 new wells started, as compared with 24 during the previous week, a total for the current year to date of 91, as compared with 95 at the same time last year. The number of permits issued for wells in the San Joaquin Valley is very encouraging and presages added development work during the coming year. Permits were issued for the following new wells:

Torrance

Location, company and well:
23-4-14 Westland Oil Co., Inc. 1
23-4-14 Westland Oil Co., Inc. 2
E. J. Miley—
21-4-14 Torrance 1A.
Pet. Midway Co., Ltd.—
23-4-14 Barrow Com. 1.
23-4-14 Wilson Com. 8.
Standard Oil Co.—
15-4-14 Marble 1.
15-4-14 Marble 2.
15-4-14 Marble 3.
Seaboard Pet. Co.—
23-4-14 McIntyre 1.
23-4-14 W. H. Ford 1.
23-4-14 E. B. Campbell 1.
23-4-14 Van Alen Oil Co. 4.
23-4-14 Cons. Mutual Oil Co. 5
Geo. F. Getty—
15-4-14 Torrance 6-A.
14-4-14 Torrance 20.
23-4-14 Torrance 21.
C. C. M. O. Co.—
23-4-14 Kettler 9.
23-4-14 Kettler 10.
Superior Oil Co.—
24-4-14 Torrance 15.
15-4-14 Pet. Securities Co. 27.
15-4-14 Pet. Securities Co. 28.

Compton

Shell Co.—
33-3-13 Reyes 2.
Midway-Sunset-Elk Hills
C. J. Berry—
34-12-24 Hillside 22.
18-11-23 Western Minerals Co. 41.
17-11-23 Western Minerals Co. 53-F.
18-11-23 Western Minerals Co. 61.
36-32-23 Formax Oil Co. 12.
36-32-23 Formax Oil Co. 13.
26-30-24 Associated Oil Co. 3.
26-30-24 Associated Oil Co. 22.

N. LOUISIANA-ARKANSAS

(Continued from Page 62)

000,000 feet of gas at 2,122 feet. The lease is in the east end of Union Parish, 10 miles west of the Monroe gas field.

Interest continues in development in the north end of the parish, in the vicinity of the Davidson & Palmer discovery well, and a number of new tests were started. The Gulf Refining Co. is down 50 feet in No. 1 Green, Section 19-23-1e, and is rigging up to drill No. 1 Security Trust, in Section 23-23-1w, the first offsetting the discovery well and the second, 2 miles west of it. The Arkansas Natural Gas Co. is down 200 feet in No. 1 Templeton, Section 19-23-1e, closely adjoining the discovery well.

Drilling activity has spread throughout the entire parish as a result of the discovery of oil near Oakdale and Farmerville, the parish seat, is now the center of a drilling campaign. Dawson & Perrott have derrick up for a test on the Hodge lease in Section 27-19-1e, in the south end of the parish, and 10 miles south of Farmerville. Evans and others have derrick up for No. 1 Cole, in Section 16-22-2e, 10 miles northeast of Farmerville and 10 miles southeast of the discovery well.

The Neddo Petroleum Invincible Corp. is drilling in rock at 1,530 feet in No. 1 Smith, Section 2-23-3w, in the northwest corner of the parish, 4 miles east of Junction City. James A. Noe and others set 6-inch casing at 2,070 feet in No. 1 Gulley, Section 36-21-1e, 5 miles east of Farmerville.

The Ohio Oil Co. is drilling at 1,415 feet in No. 1 Dubach Lumber Co., Section 15-20-1w, 4 miles southwest of Farmerville. The Roxana Petroleum Co. is drilling at 1,225 feet in No. 1 Smith, Section 30-22-2w, 12 miles northwest of Farmerville. Tarver and others are rigging up to drill No. 1 Payne, in Section 30-21-1w, 6 miles west of Farmerville.

Webster Parish

In the Cotton Valley district, there is steadily increasing activity as a result of the big gas and oil well brought in by the Oil Fields Gas Co. The Fortuna Oil Co. set 12½-inch casing at 220 feet in No. 1 Pruitt, Section 17-21-9, and 8-inch at 1,200 feet in No. 1 Station, Section 31-22-10. O'Brien and others are drilling at 2,150 feet in No. 1 Doles, Section 26-21-9. Snyder and others are rigging up to drill No. 2 Hodges in Section 15-21-10. Stock & Eggers have made a location for No. 1 Bible in Section 8-20-9. The Triangle Drilling Co. is rigging up to drill No. 1 Merritt in Section 14-21-10. The White Oil Corporation is rigging up to drill No. 1 Glesson in Section 21-22-9.

In the southeast corner of the parish, the Standard Oil Co. is drilling at 1,675 feet in No. 1 Woodard & Walker, Section 16-17-8. In the northwest corner of the parish, Smitherman & McDonald are rigging up to drill No. 1 Baucher in Section 21-23-11.

Arkansas Wildcats

Calhoun County: The Sure Oil Co., formerly reported Vitek Oil Co., is drilling lime at 2,200 feet in No. 1 Adams, shut down for some time, Section 29-12-12.

Clark County: The American Drilling Co. has abandoned No. 1 Wilson in rock at 620 feet, Section 15-8-22.

Grant County: The Texas Co. is drilling gumbo at 1,605 feet in No. 1 Chicago Land & Timber Co., Section 14-6s-13w.

Hempstead County: Johnson and others are drilling at 2,100 feet in No. 1 State, Section 12-13-27. Myers and others are down 1,795 feet in No. 1 Nichols, Section 17-11-25. G. W. Simmons, trustee, claims six feet of sand at 2,207 feet in No. 1 Adams and is now making arrangements to test at that depth, Section 36-12-27.

Lafayette County: The Lewisville Syndicate is arranging to abandon No. 1 Osborn, having reached the contract depth of 2,500 feet. The well is 6 miles north of Lewisville.

Miller County: Kingsley and others are arranging to resume drilling in No. 1 Thompson, shut down for a number of weeks, with 10-inch casing set at 500 feet, Section 33-14-28.

Nevada County: Steele & Sandlin abandoned No. 1 B. Martin at 2,450 feet, Section 13-14-22. The Transcontinental Oil Co. abandoned No. 1 Blakely without testing at 2,870 feet, Section 14-13-20.

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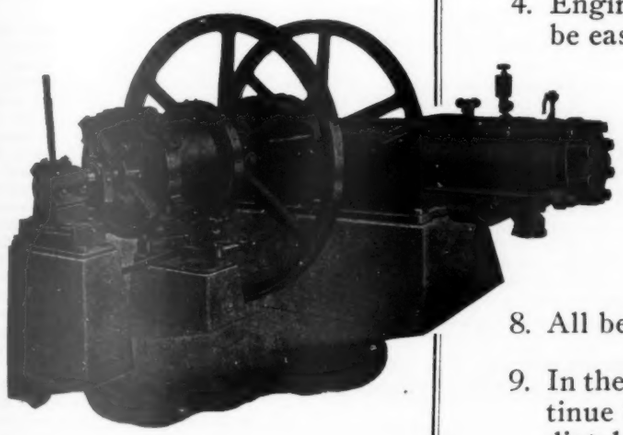

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Swift Changes in North Central Texas

Failure of the Plan to Lessen Production Led to Drastic Measures Which Succeeded in Reducing the Completion Totals and Output

By Dan F. Dugan

The year of 1923 in the North Central Texas Field will be recorded in the oil histories as an in and out proposition. Rapid fire changes were numerous and a summing up of field activities shows many things that were encouraging and also many discouraging features. The beginning of 1923 found the field in a splendid working condition with the future prospects showing a roseate hue, and all conditions considered the operators were reasonably well satisfied. The crude market was thought to be fairly well settled and this condition continued up to February, on which date the producers were receiving around $2.60 a bbl. for the higher gravity grades and in some sections of the field a premium was paid by the smaller independent refiners for their running stocks.

The first depressing bomb to be exploded was on April 23, when a general cut was posted. This was followed by other reductions and on May 12 the posted price had decreased from $2.60 to $2.20 a bbl., and a nearly demoralizing condition throughout the entire field threatened. A meeting of operators and producers was called and plans were adopted to lessen production by cutting drilling operations to a minimum. It was generally agreed to drill only offset tests and leases in proven fields.

Proration Put in Effect

It was generally conceded that a let-up in field work would follow the gentlemen's agreement to curtail, but another bomb was hurled when the monthly field tables for May and June were compiled showing 100 more completions each month than any previous month of the year. July followed with more completions reported than in any other one month of the year. In keeping with an increase in completions initial production nearly doubled that of previous months of the year and a bad condition was getting worse. On account of a general overproduction of crude it was up to the purchasing agencies to try and remedy a bad situation. The Texas Pipe Line Co. on July 3 issued an order refusing to make connections to new wells or run flush production, and July 18 put into effect its prorating order cutting daily runs to 70 per cent of the settled production. On August 16 another bulletin was issued which carried information to the effect that only 35 per cent of present production would be run and paid for. This condition continued up to September 19, when the Prairie Pipe Line Co. issued an order cutting the posted price 15 to 70 cents a bbl., according to grade, with 41 gravity and above posted at $1.75 a bbl.

On September 21 the most radical order of the year was issued when the Magnolia Petroleum Co. announced that it would pay only $1 at regular dates for any amount of crude run. This order was adopted by nearly all the purchasing agencies in the field. A glance at the field work table shows the result of the plan of handling the situation with only 75 completions in November, as against 359 in July; November initial production 7,418 bbls. as against 23,524 bbls. in July and 33,855 bbls. in May. But all dark clouds have a silver lining and the light broke in December, when the Texas Pipe Line Co. posted the first advance since February, $1.30 a bbl. for 38.9 gravity for all production with all other purchasing agencies meeting the increase and some small premiums reported as being paid for "spot oil" at Wichita Falls.

Field developments at the beginning of 1923 opened with high hopes and a confident spirit and the future held much in store for the operator and producer. This condition continued up to July, when the purchasing companies issued their orders refusing to purchase all the crude produced and eventually cut the posted price to a figure where oil could not be produced at a profit except from wells with a large flush production. The month of May showed the largest initial production, 33,855 bbls. A small slump followed in June with a reported flush flow of 26,170 bbls. Then came July with an initial production of 23,524 bbls. and 359 completed wells, reported for the month, the largest number of completions reported in any one month during the entire year. The total completions reported for the year amount to 2,666 as against 2,125 for the year 1922, a gain of 541 wells.

Taking the number of completions as a barometer of field activities, they would seemingly indicate that the oil field workmen did not fare at all badly for work during the year.

There was a part of the year, however, when operations were not much better than a third of normal. During the month of November 75 completions were reported, about a third of the normal for the year, and it is likely that the activity was less that month than even those completions indicate, since many of the completions were in the nature of forced offsets and tests drilled in order to comply with lease contracts.

Another factor which also weighs against this showing is the fact that most of the 1923 activity was in the semi-shallow district of Wichita and Archer counties, while much of the activity of 1922 was in the deep lime field in the southern section of the district.

A total of 2,666 tests were reported as completions during the year, of that number 921 were dry holes and 81 appear in the gas producing column, leaving to be credited to the fields' activities 1,662 oil producing wells, which are reported as showing 185,826 bbls. flush production, an average of around 112 bbls. per well. A total of 921 dry holes were reported as against 600 for 1922, an increase of 321. Gassers completed numbered 81 as against 68 for the previous 12 months, an increase of 19 wells.

The effect on the field's activities by the several reductions in the posted price and the prorating orders is easily explained by the field development table from January to July inclusive (seven months). There were 1,974 completions reported with an initial production of 142,724 bbls. against 692 completions for the last five months of the year, with a total production of 43,102 bbls., or an average of 62½ bbls. per well. The last five months of the year reflects the real effect of the shut down, the decrease in the posted price and the prorating of the crude runs.

With the exception of Archer County all of the districts in the field observed the shut down order. The continuance of activities in Archer County can be accounted for by the large flush flow of its producing wells, which are completed in sands from 1,300 to 1,850 feet, at a minimum cost and with the pools defined for a small acreage extent, which forces the operator with an offset lease to drill immediately in order to obtain his share of the oil in the pool.

The activities in Archer County were at their peak during the last six months of the year. A total of 1,051 wells were completed in that time. Of that number Archer County reported 397, with a flush production of 30,646 bbls. as against 66,626 bbls. for the entire field or nearly 50 per cent of the flush flow.

Archer County during 1923 furnished practically all of the highlight happenings for the North Central Texas Field. During the first months of 1923 activities in the county were confined to the Freeman-Hampton and the Gose pools with a daily production of around 4,000 bbls. Conditions continued without much disturbance until May 20, when the Sunshine State Oil & Refining Co., drilling a wildcat test on Block 55, Geraldine Townsite, encountered a sand at 1,570 feet, which after being drilled a few feet, came in flowing by heads at the rate of 500 bbls. daily. Derricks sprang up on all sides and during the next 30 to 60 days some of the county's biggest producers were completed on this old abandoned townsite.

As in nearly all of the oil producing counties in the North Central Texas Field, Archer County's greatest production is coming from a townsite, though in this particular instance it is an abandoned one. Wichita County had its Burkburnett Townsite producing pool; Young County, South Bend; Stephens County, Breckenridge; Eastland County, Ranger, Pioneer and Desdemona, all townsites with a regular government, a settled population and various commercial enterprises before oil was discovered within their confines, but it remained for Archer County to furnish an oil pool on a townsite without a single inhabitant and without a building. The town today shows only a few cisterns and debris from fallen chimneys of what was once a town of 1,500 people.

The largest completion during the year in the county is believed to have been Hanes and others' No. 3 Ferguson, in the Freeman-Hampton Pool completed March 15 for 1,700 bbls. on the gauge at 1,720 feet. Several other wells ranging in initial production from 750 to 1,000 bbls. were completed. The production of the county now ranges around 20,000 bbls. a day.

Wichita County

This section of the North Central Texas Field failed to furnish anything of a sensational nature during the year in review. Some new pools have been discovered in the county and new pay horizons have been found in old producing pools. Many wells have been completed with a production from 100 to 750 bbls. daily and some producing territory has been added through the drilling of wildcat wells.

The two most important features of the country's development during the year were the finding of a new sand on the Saunders tract in the old Clara Pool at 1,834 feet early in the summer, by the McDabb Oil Co. at an entirely new depth for that district. The sand was drilled a few feet and when completed the well made 350 bbls. daily. Other tests were started at once and the pool that for the past few years had been devoid of drilling, again took a place as one of the most active spots in the county.

Around the middle of December the Shappel Oil Co. completed a 350-bbl. well at 1,814 feet on the J. L. Jackson land at Murphey's Corner, about 10 miles south of Wichita Falls. With the discovery of this pay activities were further aroused and it was only a few days be-

(Continued on Page 178)

OUTLOOK FOR PETROLEUM EXPORTS IMPROVING WITH EUROPE'S RECOVERY

By F. D. Asche

Vice President of the Standard Oil Company of New Jersey, in charge of Export Department

The summary of my opinion regarding the outlook for the oil export business during 1924 is that I am optimistic.

Recent developments in Europe indicate that in some countries at least common sense is beginning to rule over politics. In France this improvement is shown by the fact that M. Poincare received a vote of confidence after having raised taxes an additional 20 per cent. I expect much good to come of the inquiry into Germany's ability to pay reparations. The most important problem in connection with the revival of business in Europe is that of straightening out the tangle regarding reparations. Once this is accomplished world business and financial conditions are bound to show a great improvement.

Substantial progress has been made in England, France, Italy and Spain, and some other countries in Europe, but there is great room for improvement, particularly, in Germany and Poland. This area of Central Europe is the heart of the Old World's troubles.

The labor government of England is not considered very much of a threat, inasmuch as Mr. Asquith is taking a hand in it. There does not appear to be cause for worry in that quarter at the present time.

On the whole it appears that American oil companies will do a good business in Europe this year. Of course higher prices in the United States will have the effect of restricting consumption in some quarters, especially since there are various import duties and taxes which have to be added on to the price of oil to consumers in many countries. But this should not be serious unless we have "runaway" prices here.

California oil served as a disturbing influence in the export market during 1923, inasmuch as the bulk of California oil exported to Europe was in competition with oil shipped from Gulf and Atlantic ports. Production on the Pacific Coast is falling, and indications are that California will be practically removed as a competitor in this market during the current year.

An indication of current conditions in California is that fuel oil is now worth $1 per barrel at San Pedro. It costs 75 cents per barrel to bring this fuel oil to New York, or a total of $1.75 per barrel laid down in this harbor. The present price of fuel oil in New York is $1.45, which, it is evident, is below the cost of delivery. Not so long ago, fuel oil could be delivered here for as little as $1.35 per barrel.

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Biggest Year in Oklahoma Oil Production

State Has Produced Billion Barrels in Past Eight Years. Forced Conservation in 1923 Means Greater Returns

By James McIntyre

Oklahoma has produced over a billion barrels of crude petroleum in the last eight years. It has produced 1,521,531,679 bbls. since oil was discovered in the State in 1891 and has produced 1,521,334,864 bbls. of its total production since January 1, 1904. It has averaged 76,066,743 bbls. a year since the real development began in 1904 and has averaged 83,966,967 bbls. a year since January 1, 1906, when the Glenn Pool began to astonish the oil world with its big production.

It has been 32 years since oil was discovered in Oklahoma, yet its thirty-second year was the biggest in the State's history in the quantity of oil produced. Last year Oklahoma produced 165,012,685 bbls., or 16,266,840 bbls. in excess of its production in 1922 when many oil men thought it reached its peak. This enormous production could easily have been increased had it not been for the shutting down of operations for several months in Burbank, the biggest field in the State, the curtailment of operations in the Hewitt Field and in Tonkawa, and the voluntary decrease in operations in every field in the State, because of the great general overproduction of crude and the consequent low market price.

Profit From Proration

The record of 1924 will profit by the conservation movement of 1923 in Oklahoma, as the oil left in the ground will be brought to the surface this year and will command higher prices, unless all signs fail.

The Osage County and Eastern Kay County division, which includes all the Burbank Field and the remainder of the Osage nation, is credited with 44,085,491 bbls. the past year. Of this 6,687,297 bbls. were produced in the Kay County portion of the Burbank Field, opened in January, 1923, leaving 37,398,194 bbls. to the credit of Osage County alone. This was not as good a record as Osage County made in 1922 when the total production reached 38,491,571 bbls.

Creek County was second in rank as a producer and from the Cushing, Bristow and Glenn Pools and the miscellaneous scattered developments in the county came a total of 34,711,524 bbls. in 1923, which was somewhat less than the county's record of the preceding year when it produced 36,163,035 bbls.

The Kay-Garfield-Noble County district, Oklahoma's great high-gravity oil division, wherein lie the Tonkawa, Billings, Garber, Blackwell, Ponca City and Newkirk pools, came third with a total of 30,852,700 bbls. as against 8,577,413 bbls. in 1922, an increase last year of 22,275,287 bbls.

Carter County was fourth in the list. The oil reliable Healdton Pool, a contemporary of Cushing, also the great Hewitt Pool with its multiplicity of pay sands, and the Graham, Fox and Brock Pools are located in Carter, and they produced a total of 18,019,723 bbls. In 1922, 19,437,146 bbls. were produced in the county, but no wells were drilled in Healdton last year and very few in Hewitt.

Settled Production

Okmulgee County followed Carter with a total of 7,326,202 bbls. as compared with 9,110,780 bbls. in 1922. In this county are the Mounds, Beggs, Bald Hill, Morris, Okmulgee, Tiger Flats and Hamilton Switch pools, all of which have helped make the history of the Oklahoma oil field, but which have seen their best days and settled down to the deliberate existence of old oil fields. Okmulee had its biggest year in 1920 when it produced 17,401,316 bbls.

A comparison of the production by county in 1923 and in 1922 shows Washington County in 1922, 2,712,942 bbls.; 1923, 2,658,956 bbls.; Nowata-Rogers, 1922, 2,587,220 bbls.; 1923, 2,490,191 bbls.; Tulsa, 1922, 4,135,391 bbls.; 1923, 3,517,545 bbls.; Okfuskee, Seminole and Hughes, 1922, 9,322,407 bbls.; 1923, 6,048,425 bbls.; Muskogee and Wagoner, 1922, 1,018,746 bbls.; 1923, 642,499 bbls.; Pawnee, 1922, 3,595,335 bbls.; 1923, 3,161,345 bbls.; Payne, 1922, 1,536,615 bbls.; 1923, 3,048,557 bbls.; Stephens-Cotton, 1922, 6,654,915 bbls.; 1923, 5,268,040 bbls.; Caddo, 1922, 878,375 bbls.; 1923, 833,467 bbls.; Garvin, 1922, 1,292,262 bbls.; 1923, 2,094,579; Pontotoc, 1922, 222,682 bbls.; 1923, 161,856 bbls. Of all the above counties only one, Garvin County, showed a gain in 1923 over the preceding year, the Robberson Pool having been responsible for this.

It will be seen by a careful analysis of the figures that Oklahoma's gain in production in 1922 can really be attributed to the Tonkawa Field. Osage County showed a loss from the year before but the tremendous increase in the Kay, Noble and Garfield area was made possible by the new production in the Tonkawa Field which had its big development in 1923.

Over a Five-Year Period

Going back over a period of five years the largest producing divisions in Oklahoma have been Osage, Creek, Carter and Okmulgee Counties, in the order named. In that time Osage County has produced 131,627,852 bbls. of crude as follows:

Osage County Production

1923	37,398,194
1922	38,491,571
1921	20,847,506
1920	24,396,281
1919	14,494,300
Total	131,627,852

Thus far Osage County's best year was 1922, but this was because of the curtailment of operations during a part of the past year, which affected not only the Burbank Field but all other pools in the county, more or less.

In the five-year period Creek County was not very far behind Osage in results. The old Cushing and Glenn Pools, and later the Bristow and Eastern Bristow fields, maintained Creek County's record as a big producer of oil and in the five years it furnished the trade with 131,042,082 bbls. of crude as follows:

Creek County Production

1923	34,711,524
1922	36,163,035
1921	20,961,619
1920	19,271,610
1919	19,934,294
Total	131,042,082

The big jump in production in 1922 over 1921 shows the influence of the Bristow and Eastern Bristow fields.

Carter stood third with 93,816,853 bbls. in the past five years. Its yearly record was as follows:

Carter County Production

1923	18,019,723
1922	1,437,146
1921	23,933,483
1920	19,057,797
1919	13,368,704
Total	93,816,853

Up to the opening of the Hewitt Field, Carter County depended largely on the Healdton Pool to keep it prominently on the oil map, but the increase in production in 1920 and 1921 was due to the development of Hewitt, a near neighbor of Healdton, but on a different structure and producing a much better grade of crude. A deep sand discovery in Hewitt last year has not yet been developed, but it promises this year a large amount of new oil from a small formation in the heart of the field.

Okmulgee County has figured largely in the oil development of Oklahoma. In the past five years it has produced 56,925,744 bbls., while on the fringe of the county a large quantity of crude has been produced in the Eastern Bristow and Deaner and Lyons Pools, but these are included in Creek and Okfuskee County production. Okmulgee's five-year record has been:

Okmulgee County Production

1923	7,326,202
1922	9,110,780
1921	11,814,540
1920	17,401,316
1919	11,272,870
Total	56,925,744

It was in 1919 that the deep sand development in the west half of Okmulgee County was opened and in the next two years it was one of the busiest oil regions in the United States. It reached its height in 1920 with a total of 17,401,316 bbls., of which much was high grade oil, commanding a 50-cent premium over the then top notch posted price of $3.50.

The total production of Osage, Creek, Carter and Okmulgee Counties in the past five years has been 413,414,531 bbls. out of a total production of 623,877,551 bbls. produced in that period in the State. These four counties produced 66 per cent of all the oil produced in the State over a five-year period.

Following is the production in 1923 by county and by month in detail and the year's total production by county and by month, together with the total annual production of the State since 1891:

County—	Daily Prod.	Mo. Prod.
January		
Washington	7,651	237,181
Nowata-Rogers	7,219	223,789
Osage-Eastern Kay	120,503	3,735,593
Tulsa	9,956	308,636
Okmulgee	24,305	753,495
Okfuskee, Seminole Hughes, McIntosh	14,414	446,834
Muskogee-Wagoner	2,186	67,766
Creek	103,300	3,202,300
Pawnee	9,171	284,301
Payne	10,099	313,069
Kay-Noble	41,046	1,272,426
Garfield	7,347	227,757
Carter	49,082	1,521,543
Stephens-Cotton	14,559	451,329
Caddo	2,662	82,522
Garvin	6,010	186,310
Pontotoc	444	13,764
Total	429,954	13,328,574
Same period 1922	331,020	10,261,620
Increase	98,934	3,066,954
February		
Washington	7,598	212,744
Nowata-Rogers	7,202	201,656
Osage-Eastern Kay	109,011	3,052,308
Tulsa	9,662	270,536
Okmulgee	20,809	582,652
Okfuskee, Seminole, Hughes and McIntosh	15,096	422,688
Muskogee-Wagoner	1,910	53,480
Creek	106,115	2,971,220
Pawnee	9,750	273,000
Payne	9,991	279,748
Kay-Noble	67,623	1,893,444
Garfield	7,218	202,104
Carter	49,403	1,383,284
Stephens-Cotton	15,267	427,476
Caddo	2,700	75,600
Garvin	4,665	130,620
Pontotoc	445	12,460
Total	444,465	12,445,020
Same period 1922	355,657	9,958,396
Increase	88,808	2,486,624
March		
Washington	7,587	235,197
Nowata-Rogers	7,183	222,673

(Continued on Page 116)

KANSAS PRODUCTION SMALLEST FOR SEVEN-YEAR PERIOD IN 1923

By James McIntyre

Kansas, which was hit by the proration of crude runs in 1923, did not have the full opportunity to produce as much crude as the State was capable of doing, and its record, 29,812,123 bbls. for the year, indicated a decrease of 2,575,523 bbls. from the record of 1922 and was the poorest year in production since 1919 when 29,683,972 bbls. were produced.

It was much below the average of the State for the past seven years. In that time 244,319,575 bbls. were produced, an average of 34,902,796 bbls. per year. Altogether Kansas has produced 290,241,392 bbls. since 1889. It did not reach the million-barrel mark until 1904 when the production touched 4,250,779 bbls.

Greenwood and Cowley were the only counties showing a material increase in production over the year before. In 1923 Greenwood produced 6,938,702 bbls. and in 1922, 3,376,575 bbls., an increase of 3,562,127 bbls., while Cowley, which in 1922 produced 243,411 bbls., had a production of 629,513 bbls. last year, a gain of 386,102 bbls.

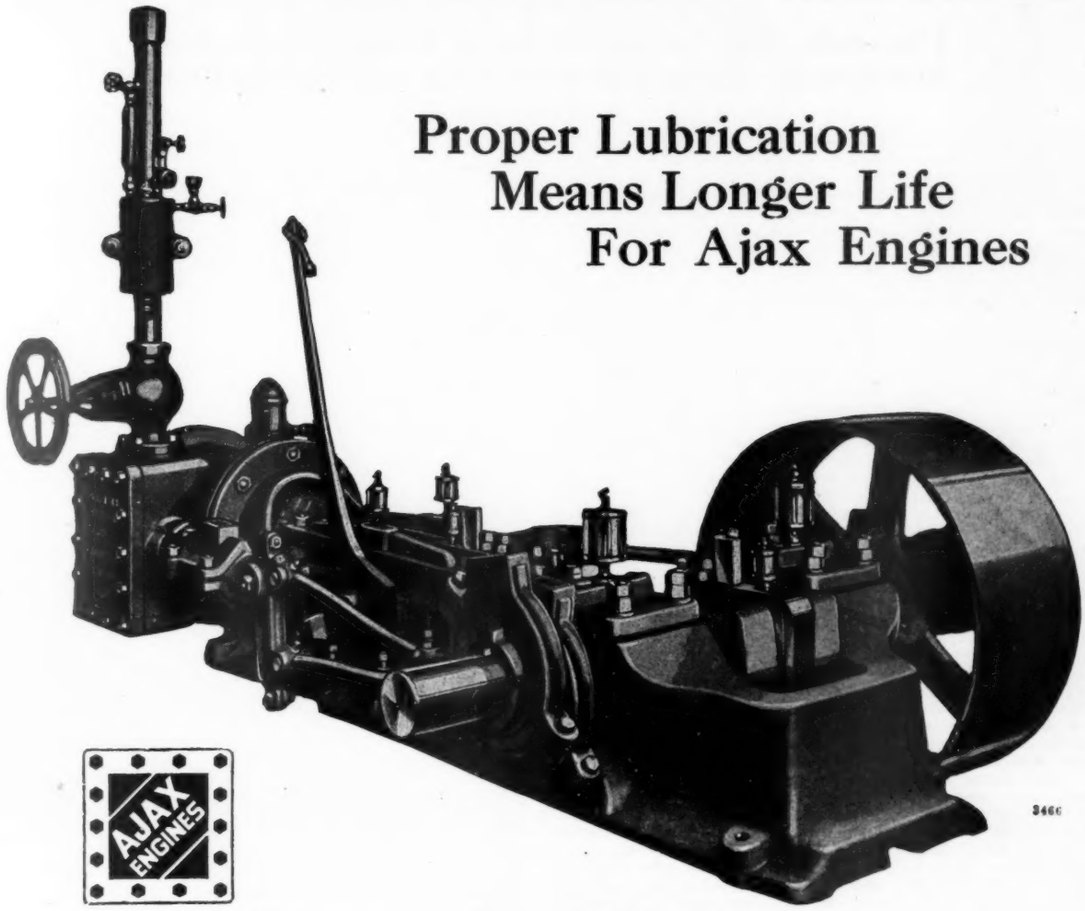
Butler dropped from 17,733,299 bbls. in 1922 to 14,221,115 bbls. in 1923. The El Dorado, Towanda and Augusta Pools, which were once among the most important of Mid-Continent oil fields, are in Butler County. The Marion County, in which the Florence-Urschel, Covert-Sellers and Peabody Pools are located, dropped off from 5,636,647 bbls. to 3,266,996 bbls. Chautauqua County showed a loss, its production in 1922 having been 1,137,945 bbls. and in 1923 1,012,631 bbls. Other counties compared as follows: Montgomery, 1922 786,073 bbls., 1923 765,126 bbls.; Wilson, 1922 147,666 bbls., 1923 110,438 bbls.; Allen, 1922 549,570 bbls., 1923 506,896 bbls., Neosho, 1922 393,901 bbls., 1923 362,161 bbls.; Elk 1922 283,888 bbls., 1923 244,919 bbls.; Anderson, 1922 370,726 bbls., 1923 391,741 bbls.; Miami, 1922 236,879 bbls., 1923 226,517 bbls.; Franklin, 1922 208,149 bbls., 1923 229,595 bbls.; Linn, 1922 155,664 bbls., 1923 127,851 bbls.; Labette, 1922 22,540 bbls., 1923 21,187 bbls.; Bourbon, 1922 46,333 bbls., 1923 46,586 bbls.; Lyon, 1922 14,880 bbls., 1923 23,054 bbls. The fuel oil consumed on leases in 1922 was 1,043,500 bbls. and was not included in the figures on production of the fields in which it was produced, but in the 1923 figures it was so included during a portion of the year and only 678,800 bbls. was carried as a separate item.

Following are the production figures for the year by county and by month, with the total for the year by county and the total production by year since 1889:

County—	Daily Prod.	Mo. Prod.
January		
Marion	11,116	344,596
Butler	47,117	1,460,627
Greenwood-Woodson	10,612	328,972
Cowley	1,175	36,425
Chautauqua	2,750	85,250
Elk	649	20,119
Montgomery	2,115	65,565
Wilson	325	10,075
Allen	1,566	48,546
Neosho	981	30,411
Miami	636	19,716
Franklin	650	20,150

(Continued on Page 120)

Proper Lubrication Means Longer Life For Ajax Engines



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AJAX DRILLING ENGINES

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Spectacular Rise and Fall of Powell

Unusually High Average of Initial Production not Long Maintained. Field Soon Drilled Up and Put on Pump

By Dan F. Dugan

The East Central Texas deep sand development which was opened in September, 1921, by Humphreys and his associates with a big well near Mexia, Limestone County, and which had a spectacular career in the early months of 1922, scored a marvelous comeback in 1923 with the development of the Powell Field, east of Corsicana, in Navarro County, and northeast of the Mexia Field.

Following the discovery of big production in the Woodbine sand in the Mexia area there was a tremendous amount of drilling which included most of the counties of East Texas. Outside of Limestone County, Navarro County was given the greatest play by the wildcatter and the Currie Field, lying northeast of Mexia, and between the Mexia and the later Powell Field, was discovered and developed. Currie, however, did not assume the importance of Mexia. The discovery of oil in the Currie area prompted the drilling of numerous wildcat tests in other parts of Navarro County and 54 dry holes were drilled in 1922, while the 58 oil wells drilled in the Currie and Wortham districts yielded in initial production a total of 59,955 bbls., or an average of 1,034 bbls. per well. After Mexia and Currie had been thoroughly defined and more than half a hundred dry holes drilled, hope in Navarro County was well nigh abandoned. But there were a few who still had faith in it and among these were some Corsicana men who had formed a company which they called the Corsicana Deep Well Drilling Co., and which had a test on the Burke farm on the W. P. Lane survey, about a mille and a half south of the town of Powell, a small station east of Corsicana. This test had been started four years previously, long before any development was thought of in the Mexia Field, but the operators were not financed adequately and with poor material and bad luck had been forced to abandon two holes before they succeeded in drilling down to the Woodbine sand. They hit the Woodbine at 2,950 feet and at 12 feet in the sand the well started flowing by hour-and-a-quarter heads at the rate of 15 bbls. per head. The oil was of 27 gravity. As the Magnolia Petroleum Co. had a pipe line near at hand taking oil from the old Corsicana shallow field, opened many years ago, there was a ready market for the oil, and soon there were scores of tests started in the general neighborhood.

The discovery well soon developed salt water. It had been drilled on the very edge of the structure. No other producing wells were completed northeast of it and those drilled on other sides of it while producing wells when completed soon developed salt water. This put a general damper on the field, but some of the operators who had started wells in the district persevered and among these was the Hughes Development Co., which in May was rewarded with a real gusher on the McKie farm, about a mile and a half southeast of the discovery well. This well was good for about 8,000 bbls. and the oil was of 37 gravity. Immediately there was a rush to acquire leases on all the land for miles around. It was not long before other big wells were completed and the Magnolia, Gulf, Prairie, Sinclair, Texas and Humble companies had pipe lines into the field, while other companies built short pipe lines from their leases to tank farms which meanwhile had been equipped with tanks of 55,000 to 80,000 bbls. capacity, and there were facilities to handle 300,000 bbls. a day should the field reach that figure which it did in November.

The field reached the top notch of its development in October when 167 wells were completed with a total initial production of 405,000 bbls. and the top of its productivity on November 13 when the production of the field reached 354,893 bbls. a day, from which point it rapidly and steadily fell off until about the last week of the year it had fallen back to 75,000 bbls., closing the year at 91,000 bbls. after about 100 wells which had quit flowing had been put to pumping.

Powell production comes from the Woodbine sand, a loose formation of varying thickness as great as 100 feet. The wells had an unusually high average of initial production, surpassing in this respect the wells of any other high grade field of the United States, but the initial production was never maintained long; neither did the wells flow for any length of time. By the close of the year nearly all were on the pump, excepting the very recently completed operations. The field produced 30,597,824 bbls. during the year, most of it in the last half of the year. The territory had been almost entirely drilled up when the year ended, about 50 drilling wells remaining, the completion of which was expected to practically close the development of the pool, with the exception of a few scattered locations.

The Powell Pool far surpassed the Mexia Pool in the average size of its wells and the number of wells completed. At the close of 1923 while there were 531 producing wells in Mexia and 591 in Powell. Of course, Powell has yet to produce the volume of crude that Mexia has, and time only will tell whether it will produce as much per acre as the older field in Limestone County.

EAST CENTRAL TEXAS

Summary of Work Completed in 1923

Completions by Districts

County—	Comp.	Prod.	Dry	Gas
Navarro	664	1,616,942	64	1
Limestone	78	2,585	40	2
Miscellaneous	29	0	29	0
Total 1923	771	1,619,527	133	3
Total 1922	864	750,770	300	16
Difference	93	868,757	167	13

Completions by Months

Month—	Comp.	Prod.	Dry	Gas
January	19	1,165	11	0
February	13	525	8	0
March	19	1,205	12	0
April	15	2,260	6	0
May	13	11,095	2	1
June	35	51,475	20	0
July	35	132,710	2	0
August	75	203,724	6	0
September	127	331,020	4	0
October	167	405,533	17	0
November	136	398,628	18	0
December	117	80,187	27	2
Total 1923	771	1,619,527	133	3
Total 1922	864	750,770	300	16
Difference	93	863,757	167	13

East Central Texas Production

Powell—	Mo. Prod.	Dy. Av.
January-May, 5 mos.	30,000	199
June	445,329	14,844
July	2,184,942	70,482
August	3,848,897	124,158
September	5,170,500	170,235
October	7,681,614	247,794
November	8,278,800	275,960
December	2,957,741	95,411
Total	30,597,824	83,830
Mexia—		
January	1,818,179	58,651
February	1,597,813	57,065
March	1,803,876	58,190
April	1,650,937	55,031
May	1,673,042	53,969
June	1,568,420	52,281
July	1,499,098	48,358
August	1,432,944	46,224
September	1,391,400	46,380
October	1,277,603	41,213
November	1,247,767	41,589
December	1,186,575	38,265
Total	18,147,654	49,720
Currie—		
January	161,666	5,215
February	154,812	5,529
March	161,293	5,203
April	152,802	5,093
May	224,934	7,256
June	171,473	5,716
July	145,359	4,689
August	125,340	4,043
September	147,120	4,904
October	115,599	3,729
November	95,220	3,174
December	93,186	3,006
Total	1,748,804	4,791

East Central Texas Field

Corsicana (estimated)	292,000
Powell	30,597,824
Mexia	18,147,654
Currie	1,748,804
Total 1923	50,786,282
Total 1922	35,347,217
Increase	15,439,065

PRODUCTION OF EAST CENTRAL TEXAS BY MONTHS (Revised)

January	3,010,701
February	1,786,465
March	1,996,015
April	1,833,201
May	1,938,871
June	3,299,228
July	3,856,139
August	6,431,342
September	6,733,020
October	9,099,614
November	9,646,647
December	4,252,102
Total, 1923	50,786,282
Total, 1922	35,347,217
Increase	15,439,065

CURB PUMP BAN IN NEW YORK

NEW YORK, Jan. 28.—Representatives of the Standard Oil Co. and of the Tide Water Oil Co. have been conferring with officials in Queens regarding the order issued by Magistrate James J. Conway that all gasoline pumps standing in front of public garages at the street curb line must be removed or heavy fines would be placed upon the owners of the garages. Most of the pumps are owned by these two companies. The representatives of the two large companies said they have so many pumps to remove they are afraid the work cannot be completed in a week, the allotted time, although they have already started to work on the job.

Magistrate Conway refused last week to fine the companies but placed the fines on the garage owners. The latter are afraid they may again be fined because of the inability of the oil companies to comply with the court's orders.

DENIES REPORTED SALE

C. C. Hamilton, president of the Sunray Oil Co., denies that the Danciger Oil & Refining Co., of Kansas City, has purchased any interest in his company. The company has a well in Section 18-13-5 in Oklahoma, which it expects to complete soon.

WEST VIRGINIA TEST WILL BE MADE THE WORLD'S DEEPEST WELL

The picture is of the Hope Construction & Refining Co.'s Terra Alta well in Portland district, Preston County, West Virginia. It is the purpose of the company to drill this well, barring accidents, deeper than any other well in this or any other country. No time is fixed or depth to which it will be drilled. If oil or gas is found in commercial quantities in one of the recognized producing formations drilling will be discontinued.

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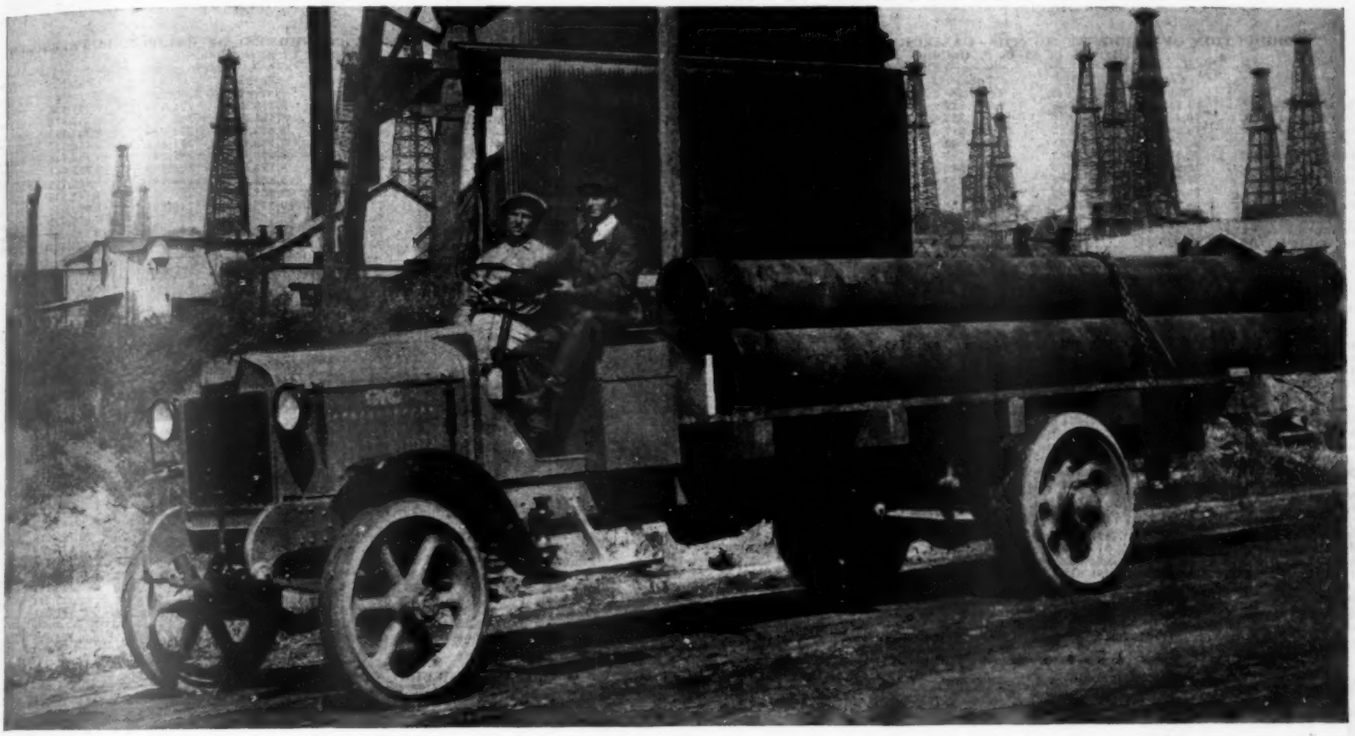

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Crude Petroleum Statistics for California Fields

PRODUCTION OF CRUDE BY MONTHS—CALIFORNIA OIL DISTRICTS
(Barrels of 42 U. S. Gallons)

Month—	1923 Total Barrels	1923 Daily Average	1922 Total Barrels	1922 Daily Average	1921 Total Barrels	1921 Daily Average
January	16,457,445	530,885	9,717,632	313,472	10,087,424	325,401
February	16,426,759	586,670	9,060,382	323,585	9,186,907	328,104
March	19,608,192	632,522	10,250,547	330,663	10,494,863	338,544
April	20,695,959	689,865	10,186,081	339,536	10,169,759	338,992
May	21,535,365	694,689	11,156,193	359,554	10,445,171	336,941
June	22,667,106	755,570	10,731,942	357,731	10,111,361	337,045
July	25,262,082	814,906	11,598,291	374,138	10,225,171	329,844
August	26,440,005	852,903	11,848,882	382,221	10,020,027	343,227
September	25,762,487	858,750	12,205,146	406,838	7,859,394	261,980
October	24,576,400	792,787	13,419,432	432,885	7,063,807	227,865
November	22,397,848	746,595	14,035,537	467,851	8,808,468	293,616
December	21,899,247	706,427	15,426,810	497,639	10,094,549	325,631
Total	263,728,895	723,416	139,626,876	382,539	114,566,901	313,882

CONSUMPTION (DELIVERIES TO CONSUMERS) OF CALIFORNIA PETROLEUM
(Barrels of 42 U. S. Gallons)

Month—	1923 Total Barrels	1923 Daily Average	1922 Total Barrels	1922 Daily Average	1921 Total Barrels	1921 Daily Average
January	15,006,785	484,090	8,478,648	273,499	9,777,496	315,403
February	14,249,952	568,927	8,511,355	303,977	8,887,474	317,491
March	17,827,016	575,065	8,833,280	284,945	9,144,432	294,982
April	18,352,071	611,736	8,144,625	271,487	9,156,477	305,216
May	20,992,419	677,175	8,910,856	287,447	7,888,745	254,474
June	19,510,364	650,345	9,185,576	306,186	8,321,097	277,370
July	19,243,625	620,762	9,863,189	318,167	8,468,729	273,186
August	21,971,774	708,767	9,268,978	298,999	7,868,536	253,824
September	23,389,713	779,657	10,218,039	340,601	8,060,674	268,689
October	21,723,459	700,757	12,108,901	390,609	7,677,990	247,677
November	21,744,053	724,802	11,850,645	395,021	8,893,287	296,443
December	22,055,237	711,459	13,996,606	451,503	8,484,523	273,694
Total	236,066,468	646,757	119,370,518	327,042	102,629,470	281,177

CALIFORNIA CRUDE OIL PRODUCTION—JANUARY-DECEMBER, 1923, INCLUSIVE
(Barrels of 42 U. S. Gallons)

District—	January	February	March	April	May	June	July	August	September	October	November	December	Total	Daily
Kern River	620,028	579,905	629,448	605,803	624,800	587,423	604,455	600,899	570,078	465,599	437,970	489,726	6,816,134	18,676
McKittrick	187,286	176,442	189,556	186,638	176,145	171,369	185,643	184,305	182,096	193,532	179,631	179,059	2,191,702	6,005
Midway-Sunset	2,457,757	2,267,508	2,391,321	2,421,120	2,324,714	2,274,287	2,268,492	2,296,565	2,239,352	2,298,350	2,166,087	2,397,118	27,803,381	76,173
Elk Hills	808,641	682,682	696,290	624,181	611,682	649,440	735,168	686,195	689,624	714,976	640,894	634,518	8,174,371	22,396
Lost Hills-Belridge	244,456	185,514	206,167	198,643	185,096	148,992	117,113	115,675	113,774	109,314	110,137	108,703	1,843,483	5,051
Coalinga	420,094	384,319	423,452	410,316	426,631	392,141	409,533	446,586	425,950	426,611	513,179	522,027	5,210,839	14,276
Wheeler Ridge	4,654	7,195	7,771	6,568	6,941	6,234	8,735	13,009	15,259	14,154	17,298	20,856	128,674	353
Watsonville	1,876	1,611	1,783	1,725	1,783	1,675	1,782	1,783	1,750	1,783	1,725	1,782	21,053	58
Santa Maria	261,787	239,417	261,157	259,659	266,747	254,159	259,253	266,679	244,835	248,255	204,126	237,598	3,003,472	8,228
Summerland	4,510	4,074	4,510	4,365	4,508	4,115	4,511	4,516	4,365	4,513	4,365	4,510	53,863	148
Ventura-Newhall	315,670	278,782	313,064	310,125	330,164	325,133	329,580	319,096	302,709	304,889	292,031	281,221	3,702,464	10,144
Los Angeles-Salt Lake	110,835	96,729	103,142	98,930	93,064	97,290	99,045	100,906	92,859	101,297	100,581	98,358	1,192,036	3,266
Whittier	59,521	45,831	54,658	53,944	57,604	55,605	53,212	52,653	50,049	51,423	50,996	59,723	645,219	1,768
Fullerton	316,361	292,706	327,745	359,524	370,913	360,028	345,618	359,921	338,742	330,262	312,058	350,783	4,064,661	11,136
Coyote	532,512	475,839	523,042	344,975	79,919	73,894	76,139	67,881	76,729	61,857	59,576	75,462	2,447,825	6,706
Santa Fe Springs	2,825,197	3,081,688	4,719,456	6,119,635	6,828,385	7,578,882	9,232,717	9,998,169	9,439,874	8,004,471	6,419,185	5,533,616	79,781,275	218,573
Montebello	373,439	354,282	367,711	372,656	342,802	325,225	322,741	332,266	314,689	318,244	323,849	327,762	4,075,669	11,166
Richfield	592,623	515,774	576,014	530,248	535,882	496,876	512,020	508,509	485,079	464,645	459,376	444,279	6,121,325	16,771
Huntington Beach	2,492,012	3,001,732	3,413,770	3,396,845	3,053,150	2,928,352	3,417,080	3,242,053	2,688,834	2,445,809	2,200,267	2,075,738	34,355,642	94,125
Long Beach	3,733,355	3,678,400	4,302,120	4,292,847	5,106,415	5,794,199	6,139,281	6,659,361	7,227,535	7,580,339	7,254,009	7,042,510	68,810,361	188,523
Torrance	84,831	77,328	96,975	97,213	108,020	141,787	139,954	183,086	222,502	394,395	610,031	973,472	3,128,694	8,572
Compton	.....	.....	.....	.....	.....	.....	.....	.....	35,803	41,682	40,477	39,736	157,698	1,391
Total	16,457,445	16,426,759	19,608,192	20,695,959	21,535,365	22,667,106	25,262,082	26,440,005	25,762,487	24,576,400	22,397,848	21,899,247	263,728,895	723,416

EFFECTIVE DATE AND PRICE PAID FOR CRUDE OIL AT WELL

Gravity—	1914 5-20	1914 7-1	1914 7-30	1914 10-3	1915 6-7	1915 10-26	1915 11-20	1915 12-28	1916 2-16	1916 4-1	1916 7-7	1917 9-20	1917 11-21	1917 5-11	1917 6-7	1917 6-28	1918 5-1	1919 6-10	1920 1-31	1920 3-17	1920 7-10	1921 5-13	1921 8-3	1922 7-15	1922 7-25	1923 1-6	1923 4-10	1923 10-9
14 to 17.9	.40	.40	.40	.375	.325	.375	.40	.43	.53	.58	.63	.68	.73	.78	.88	.98	1.23	1.23	1.23	1.48	1.60	1.35	1.10	.85	.60	.60	.60	.60
18 to 18.9	.40	.40	.40	.375	.325	.375	.40	.44	.54	.59	.64	.69	.74	.79	.89	.99	1.24	1.24	1.24	1.49	1.61	1.36	1.11	.85	.60	.60	.60	.60
19 to 19.9	.40	.40	.40	.375	.325	.375	.40	.45	.55	.60	.65	.70	.75	.80	.90	1.00	1.25	1.25	1.26	1.51	1.63	1.38	1.13	.85	.60	.60	.60	.60
20 to 20.9	.40	.40	.40	.375	.325	.375	.40	.46	.56	.61	.66	.71	.76	.81	.91	1.01	1.26	1.27	1.29	1.54	1.66	1.41	1.16	.88	.63	.62	.61	.61
21 to 21.9	.45	.425	.425	.40	.40	.40	.45	.47	.57	.62	.67	.72	.77	.82	.92	1.02	1.27	1.29	1.33	1.58	1.70	1.45	1.20	.92	.67	.65	.62	.62
22 to 22.9	.45	.425	.425	.40	.40	.40	.45	.48	.58	.63	.68	.73	.78	.83	.93	1.03	1.28	1.31	1.38	1.63	1.75	1.50	1.25	.98	.73	.70	.65	.63
23 to 23.9	.45	.425	.425	.40	.40	.40	.45	.49	.59	.64	.69	.74	.79	.84	.94	1.04	1.29	1.33	1.44	1.69	1.81	1.56	1.31	1.05	.80	.75	.68	.64
24 to 24.9	.50	.45	.425	.40	.40	.40	.45	.50	.60	.65	.70	.75	.80	.85	.95	1.05	1.30	1.35	1.51	1.76	1.88	1.63	1.38	1.13	.88	.80	.71	.66
25 to 25.9	.50	.45	.425	.40	.40	.40	.45	.51	.61	.67	.72	.77	.82	.87	.97	1.07	1.32	1.37	1.59	1.84	1.96	1.71	1.46	1.21	.96	.85	.74	.68
26 to 26.9	.50	.45	.425	.40	.40	.40	.45	.52	.62	.69	.74	.79	.84	.89	.99	1.09	1.34	1.39	1.68	1.93	2.05	1.80	1.55	1.30	1.05	.90	.77	.67
27 to 27.9	.55	.50	.45	.45	.45	.45	.50	.53	.63	.71	.76	.81	.86	.91	1.01	1.11	1.36	1.41	1.78	2.03	2.15	1.90	1.65	1.40	1.15	.95	.80	.68
28 to 28.9	.55	.50	.45	.45	.45	.45	.50	.54	.64	.73	.78	.83	.88	.93	1.03	1.13	1.38	1.43	1.88	2.13	2.25	2.00	1.75	1.50	1.25	1.00	.83	.69
29 to 29.9	.65	.60	.55	.45	.45	.45	.50	.55	.65	.75	.80	.85	.90	.95	1.05	1.15	1.40	1.45	1.98	2.23	2.35	2.10	1.85	1.60	1.35	1.05	.86	.70
30 to 30.9	.65	.60	.55	.45	.45	.45	.50	.56	.66	.77	.82	.87	.92	.97	1.07	1.17	1.42	1.47	2.08	2.33	2.46	2.20	1.95	1.70	1.45	1.11	.89	.71
31 to 31.9	.70	.65	.60	.50	.50	.50	.55	.57	.67	.79	.84	.89	.94	.99	1.09	1.19	1.44	1.49	2.18	2.43	2.55	2.30	2.05	1.80	1.55	1.17	.92	.73
32 to 32.9	.70	.65	.60	.50	.50	.50	.55	.58	.68	.81	.86	.91	.96	1.01	1.11	1.21	1.46	1.51	2.28	2.53	2.65	2.40	2.15	1.90	1.65	1.24	.95	.73
33 to 33.9	.70	.65	.60	.50	.50	.50	.55	.59	.69	.83	.88	.93	.98	1.03	1.13	1.23	1.48	1.53	2.38	2.63	2.75	2.50	2.25	2.00	1.75	1.31	.98	.74
34 to 34.9	.70	.65	.60	.50	.50	.50	.55	.60	.70	.85	.90	.95	1.00	1.05	1.15	1.25	1.50	1.55	2.48	2.73	2.85	2.60	2.35	2.10	1.85	1.38	1.01	.75
35 to 35.9	.70	.65	.60	.50	.50	.50	.55	.61	.71	.87	.92	.97	1.02	1.07	1.17	1.27	1.52	1.57	2.58	2.83	2.95	2.70	2.45	2.20	1.95	1.45	1.04	.76
36 to 36.9	.70	.65	.60	.50	.50	.50	.55	.62	.72	.89	.94	.99	1.04	1.09	1.19	1.29	1.54	1.59	2.58	2.83	2.95	2.70	2.45	2.20	1.95	1.45	1.04	.76
37 to 37.9	.70	.65	.60	.50	.50	.50	.55	.63	.73	.91	.96	1.02	1.07	1.12	1.22	1.32	1.57	1.62	2.58	2.83	2.95	2.70	2.45	2.20	1.95	1.45	1.04	.76
38 to 38.9	.70	.65	.60	.50	.50	.50	.55	.64	.74	.93	.98	1.05	1.10	1.15	1.25	1.35	1.60	1.65	2.58	2.83	2.95	2.70	2.45	2.20	1.95	1.45	1.04	.76
39 to 39.9	.70	.65	.60	.50	.50	.50	.55	.65	.75	.95	1.00	1.08	1.13	1.18	1.28	1.38	1.63	1.68	2.58	2.83	2.95	2.70	2.45	2.20	1.95	1.45	1.04	.76

Note—Prices effective April 10, 1923, originally applied only to fields in Los Angeles and Orange counties, and prices in the San Joaquin Valley fields remained as of January 6, 1923. On August 1, however, the prices of April 10 were made effective in all California fields. Prices effective October 9, apply in all California fields.

CALIFORNIA'S PETROLEUM PRODUCTION
From the Beginning of the Industry to December 31, 1923, by Fields

Year	Kern River	McKittrick	Sunset	Midway	Elk Hills	Lost Hills-Belridge	Coalinga	Wheeler Ridge	Santa Maria	Summerland	Ventura-Newhall	Los Angeles and Salt Lake	Whittier	Fullerton	Coyote	Santa Fe Springs
Prior	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	175,000	.....	.....	.....	.....	.....
1876	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12,000	.....	.....	.....	.....	.....
77	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,000	.....	.....	.....	.....	.....
78	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,227	.....	.....	.....	.....	.....
79	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19,858	.....	.....	.....	.....	.....
1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40,552	.....	.....	.....	.....	.....
81	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	99,862	.....	.....	.....	.....	.....
82	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	128,636	.....	.....	.....	.....	.....
83	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	142,857	.....	.....	.....	.....	.....
84	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	262,000	.....	.....	.....	.....	.....
85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	325,000	.....	.....	.....	.....	.....
86	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	377,145	.....	.....	.....	.....	.....
87	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	678,572	.....	.....	.....	.....	.....
88	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	690,333	.....	.....	.....	.....	.....
89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	303,220	.....	.....	.....	.....	.....
1890	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	307,360	.....	.....	.....	.....	.....
91	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	323,600	.....	.....	.....	.....	.....
92	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	385,049	.....	.....	.....	.....	.....
93	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	470,179	.....	.....	.....	.....	.....
94	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,800	570,469	196,094	.....	.....	.....	.....
95	.....	.....	.....	.....	.....	.....	.....	.....	.....	16,904	474,624	749,695	.....	.....	.....	.....
96	.....	.....	.....	.....	.....	.....	14,119	.....	.....	39,792	298,866	902,868	.....	.....	.....	.....
97	.....	.....	.....	.....	.....	.....	70,140	.....	.....	130,136	631,135	1,064,158	.....	12,000	.....	.....
98	.....	10,000	.....	.....	.....	.....	154,000	.....	.....	132,217	763,871	1,126,000	.....	60,000	.....	.....
99	.....	15,000	.....	.....	.....	.....	439,372	.....	.....	208,370	743,998	1,052,036	.....	217,599	.....	.....
1900	826,775	80,000	12,500	.....	.....	.....	547,960	.....	.....	183,486	628,734	1,280,000	.....	511,550	.....	.....
01	3,278,840	430,450	188,600	4,235	.....	.....	525,433	.....	.....	203,616	495,943	1,830,000	.....	753,198	.....	.....
02	8,988,046	619,296	167,558	3,048	.....	.....	571,233	.....	94,188	136,252	646,496	2,027,000	.....	1,103,793	.....	.....
03	16,342,099	1,353,206	352,565	27,305	.....	.....	2,138,058	.....	204,890	131,125	682,185	793,765	.....	2,305,613	.....	.....
04	17,226,240	1,856,225	390,425	910	.....	.....	5,097,853	.....	700,450	120,506	650,779	1,241,304	.....	2,224,550	.....	.....
05	15,253,845	1,373,030	419,212	18,530	.....	.....	8,882,125	.....	3,402,800	96,871	476,898	2,226,768	.....	2,118,312	.....	.....
06	12,825,166	680,756	307,550	11,800	.....	.....	8,401,105	.....	4,799,411	72,810	404,379	2,675,650	.....	2,434,512	.....	.....
07	12,346,014	2,415,840	704,805	149,944	.....	.....	8,996,268	.....	8,249,236	69,060	435,584	3,372,465	.....	3,294,206	.....	.....
08	13,803,579	3,076,300	1,463,510	434,578	.....	.....	10,725,795	.....	8,699,350	67,862	498,015	5,138,969	.....	4,273,314	.....	.....
09	14,508,242	5,807,360	1,999,701	2,234,455	.....	.....	15,406,619	.....	8,017,455	66,338	516,628	4,350,898	.....	5,157,252	.....	.....
1910	14,776,435	5,471,613	9,218,904	11,174,207	.....	4,900	18,646,570	.....	7,607,830	74,725	652,575	3,729,618	.....	6,281,221	.....	.....
11	14,078,890	5,477,532	5,559,069	21,584,602	.....	168,410	18,311,251	.....	7,465,074	71,255	661,785	3,223,661	.....	7,081,165	.....	.....
12	12,446,445	5,094,465	5,590,824	25,948,980	.....	2,680,961	19,546,122	.....	6,801,966	65,715	859,885	3,073,427	747,439	5,813,037	1,359,303	.....
13	9,980,940	4,496,842	5,984,651	33,040,129	.....	5,274,553	18,604,626	.....	5,817,711	62,406	1,022,052	2,898,846	690,133	6,189,561	3,777,359	.....
14	7,030,545	3,820,857	12,546,615	37,479,228	.....	4,830,921	15,925,887	.....	4,303,080	55,743	968,421	2,504,475	636,789	6,495,100	6,998,658	.....
15	8,034,974	3,552,801	6,006,607	33,311,486	.....	4,318,550	13,548,159	.....	4,536,840	53,000	1,036,305	2,110,133	758,163	5,661,878	6,610,508	.....
16	8,402,525	3,230,644	6,768,658	32,156,818	.....	4,852,431	14,381,493	.....	4,422,410	56,775	1,122,033	1,721,453	1,014,667	5,076,306	8,588,699	.....
17	8,495,610	3,252,544	7,072,333	29,487,812	.....	6,295,329	15,938,543	.....	5,798,070	56,570	1,186,407	1,501,799	1,156,752	4,750,582	11,458,471	.....
18	7,921,515	3,050,627	6,608,940	27,439,993	.....	5,420,079	16,283,066	.....	7,143,750	54,613	1,386,518	1,397,781	1,046,467	4,403,281	12,614,598	.....
19	7,563,025	2,810,848	5,589,885	26,133,048	281,019	4,554,821	16,385,610	.....	6,030,910	53,680	1,792,465	1,341,415	1,001,048	4,350,084	10,240,359	.....
1920	7,456,515	2,607,240	5,423,781	25,217,420	7,276,809	4,138,767	15,464,198	.....	5,938,060	54,910	2,122,449	1,311,264	842,184	5,391,497	8,732,425	998,253
21	6,715,680	2,056,101	4,613,965	24,172,350	18,085,425	3,261,281	12,340,637	.....	5,563,324	54,155	2,375,479	1,344,926	735,376	6,012,839	7,419,050	11,623,351
22	7,317,288	2,417,434	5,542,816	24,152,026	11,891,030	2,814,824	9,159,368	.....	3,797,903	48,339	3,015,877	1,258,287	717,729	4,512,974	7,000,373	19,731,775
23	6,816,134	2,191,702	5,235,889	22,567,392	8,174,371	1,843,483	5,210,839	128,674	3,002,672	52,862	3,702,404	1,192,036	645,219	4,064,661	2,447,825	79,781,275
Total	242,435,367	67,248,713	97,769,363	376,750,296	45,707,654	50,460,310	271,716,449	128,674	112,388,380	2,491,893	35,592,709	58,636,781	9,991,966	100,550,085	87,247,639	91,493,626

HUNTINGTON BEACH
Crude Production 1921-1923, Inclusive

	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
1921—				
January	.....	...	...	...
February	.....	...	...	...
March	.....	...	...	...
April	.....	...	...	...
May	.....	...	...	...
June	.....	...	...	...
July	.....	...	...	...
August	3,000	65	1	65
September	1,500	50	1	50
October	9,000	290	2	145
November	18,000	600	2	300
December	10,000	323	2	161
Total	40,500	265	...	...
1921—				
January	14,000	452	3	150
February	33,234	1,187	5	237
March	97,000	3,129	6	522
April	141,234	4,708	11	428
May	174,057	5,615	13	432
June	166,207	5,540	13	426
July	180,849	5,834	18	324
August	224,202	7,233	32	226
September	251,197	8,373	32	264
October	385,627	12,440	49	254
November	405,241	13,508	60	225
December	445,954	14,386	64	225
Total	2,618,812	6,901	...	...
1922—				
January	455,130	14,682	70	210
February	459,216	16,400	71	231
March	684,686	22,087	80	276
April	645,024	21,501	90	239
May	695,981	22,451	106	214
June	755,643	25,188	116	217
July	837,531	27,017	124	218
August	850,346	27,430	136	202
September	977,824	32,594	141	231
October	1,276,199	41,168	155	266
November	1,573,230	52,441	158	332
December	1,959,173	63,199	153	200
Total	11,169,383	30,601	...	...
1923—				
January	2,492,012	80,387	159	506
February	3,001,732	107,205	161	666
March	3,413,770	110,122	152	724
April	3,396,845	113,228	153	740
May	3,053,160	98,489	167	590
June	2,928,352	97,612	178	548
July	3,417,080	110,228	209	527
August	3,242,053	104,582	212	493
September	2,688,834	89,628	214	419
October	2,445,809	78,897	222	355
November	2,200,267	73,342	223	329
December	2,075,738	66,959	265	253
Total	34,355,642	94,125	...	...
To date	48,084,337	38,529	...	...

SANTA FE SPRINGS
Crude Production 1921-1923, Inclusive

	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
1921—				
January	2,400	77	1	77
February	2,400	86	1	86
March	2,200	71	1	71
April	2,000	67	1	67
May	2,100	68	1	68
June	2,000	67	1	67
July	2,200	71	1	71
August	2,000	65	1	65
September	1,900	63	1	63
October	2,000	65	2	32
November	68,000	2,267	3	755
December	119,000	3,839	3	1,279
Total	208,200	570	...	....
1922—				
January	132,371	4,270	3	1,423
February	115,849	4,137	3	1,379
March	133,243	4,298	4	1,074
April	202,950	6,765	4	1,691
May	288,491	9,306	7	1,329
June	402,003	13,400	10	1,340
July	480,811	15,510	15	1,034
August	984,249	31,750	25	1,270
September	1,279,166	42,639	45	948
October	1,817,747	58,637	58	1,011
November	2,414,444	80,481	70	1,150
December	2,781,631	89,730	70	1,282
Total	11,032,955	30,227	...	....
1923—				
January	2,925,197	91,122	78	1,168
February	3,081,688	110,060	82	1,342
March	4,719,456	152,241	93	1,637
April	6,119,635	203,988	93	2,193
May	6,828,385	220,270	117	1,882
June	7,578,882	252,629	140	1,804
July	9,232,717	297,830	167	1,783
August	9,998,169	322,522	193	1,671
September	9,439,874	314,662	232	1,356
October	8,004,471	258,209	247	1,045
November	6,419,185	213,973	277	772
December	5,533,616	178,504	307	581
Total	79,781,275	218,579		
Ttl. to date	91,022,430	83,126		

LONG BEACH
Crude Production 1921-1923, Inclusive

	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
1921—				
January	.....	...	...	...
February	.....	...	...	...
March	.....	...	...	...
April	.....	...	...	...
May	.....	...	...	...
June	.....	...	...	...
July	.....	...	...	...
August	5,000	161	1	161
September	7,500	250	1	250
October	12,552	405	3	135
November	23,886	796	5	159
December	26,650	860	5	172
Total	75,588	494	...	...
1922—				
January	31,662	1,021	8	128
February	99,565	3,556	11	323
March	190,594	6,148	19	324
April	261,602	8,720	25	349
May	795,504	25,661	36	713
June	1,288,054	42,935	46	933
July	1,869,086	60,293	68	887
August	2,358,828	76,091	82	928
September	2,611,765	87,059	103	845
October	2,779,285	89,654	115	850
November	2,933,295	97,776	127	770
December	3,341,355	107,785	137	787
Total	18,560,595	50,851	...	...
1923—				
January	3,733,355	120,431	156	772
February	3,678,400	131,371	152	864
March	4,302,120	138,778	173	802
April	4,292,847	143,095	174	822
May	5,106,415	164,723	189	871
June	5,794,199	193,140	196	985
July	6,139,281	198,041	212	934
August	6,659,351	214,818	227	946
September	7,227,535	240,918	266	906
October	7,580,339	244,527	289	846
November	7,254,009	241,800	297	814
December	7,042,510	227,178	329	691
Total	68,810,361	188,522	...	...
To date	87,446,544	99,033	...	...

Santa Fe Springs Development Work

	Completed No.	Wells Output	Drg.	Prod.	Abd.	New Rigs
1921—						
January	..	.....	4	1	..	...
February	..	.....	4	1	..	...
March	..	.....	5	1	..	2
April	..	.....	3	1	..	...
May	..	.....	4	1	..	...
June	..	.....	4	1	..	...
July	..	.....	4	1	..	...
August	..	.....	4	1	..	...
September	..	.....	4	1	..	...
October	1	2,095	3	2	..	1
November	1	351	9	3	..	19
December	..	.....	27	3	..	8
Total	2	2,446				30
1922—						
January	..	.....	34	3	..	9
February	..	.....	42	3	..	8
March	1	3,692	46	4	..	12
April	1	4,515	55	4	..	8
May	3	7,315	61	7	..	28
June	3	1,356	83	10	..	31
July	8	6,052	96	15	..	19
August	10	15,416	104	25	1	22
September	18	24,255	111	45	..	27
October	20	27,517	109	58	2	28
November	16	30,936	124	70	3	49
December	6	14,387	149	70	3	18
Total	86	135,440			9	259
1923—						
January	12	20,770	175	78	1	32
February	14	45,460	172	82	3	34
March	13	51,353	179	93	4	44
April	15	60,292	199	92	2	42
May	17	55,821	212	117	..	22
June	26	99,896	205	140	..	17
July	29	89,979	202	167	11	31
August	21	64,578	196	193	3	16
September	30	76,711	182	232	7	17
October	29	54,872	159	247	5	7
November	43	46,079	106	277	6	7
December	32	18,930	74	307	7	4
Total	281	684,741	...	...	49	273
To date	369	822,627	...	...	58	562

Long Beach Development Work

	Completed No.	Wells Output	Drg.	Prod.	Abd.	New Rigs
1921—						
January	..	.....	...	...	..	...
February	..	.....	1	...	..	2
March	..	.....	2	...	..	...
April	..	.....	2	...	..	...
May	..	.....	2	...	..	1
June	..	.....	4	...	..	1
July	..	.....	11	...	..	15
August	1	310	20	1	..	28
September	..	.....	31	1	..	9
October	2	611	32	3	..	5
November	2	2,052	35	5	1	6
December	1	305	45	5	..	14
Total	6	3,278	...	...	1	81
1922—						
January	3	1,201	49	8	..	8
February	3	990	60	11	..	10
March	7	3,055	63	19	..	10
April	7	6,195	68	25	1	23
May	13	19,027	70	36	1	23
June	10	18,656	80	46	1	29
July	24	33,131	82	68	1	45
August	18	23,732	98	82	2	27
September	26	32,712	111	103	2	47
October	18	20,706	129	115	1	58
November	18	29,115	157	127	3	48
December	13	26,556	180	137	4	51
Total	160	215,036	...	...	16	385
1923—						
January	30	65,569	202	156	7	53
February	9	16,709	219	152	5	28
March	22	35,698	240	173	5	42
April	14	32,878	240	174	10	34
May	14	28,819	249	189	8	26
June	13	28,480	265	196	2	23
July	20	47,042	269	213	7	40
August	18	45,743	264	227	2	11
September	31	50,916	256	266	4	22
October	36	53,909	216	289	9	8
November	19	23,420	161	297	10	13
December	24	26,795	146	329	8	14
Total	250	455,978	...	...	72	314
To date	416	674,292	...	...	89	780

RANGE OF CALIFORNIA FIELD, PIPE LINE, TANK FARM AND REFINERY STOCKS
(Barrels of 42 U. S. Gallons)

(Note: Stocks previous to August 31, 1922, are those reported by the Independent Oil Producers Agency and are not directly comparable to the present stocks reported by the American Petroleum Institute which contain all crude, residuum and tops in the State. Previous figures show crude stocks only.)

On hand—	1923 Total Stocks	1923 Monthly Surplus	1922 Total Stocks	1922 Monthly Surplus	1921 Total Stocks	1921 Monthly Surplus
January 1	61,184,928	.....	31,556,277	.....	19,618,846	.....
January 31	62,635,588	1,450,660	32,795,441	1,239,164	19,928,774	309,928
February 28	64,812,395	2,176,807	33,344,469	549,028	20,228,207	299,433
March 31	66,593,571	1,781,176	34,761,736	1,417,267	21,578,638	1,350,431
April 30	68,937,459	2,343,888	36,803,192	2,041,456	22,591,920	1,013,282
May 31	69,480,405	542,946	39,038,529	2,235,337	25,148,346	2,556,426
June 30	72,637,147	3,156,742	40,584,895	1,546,366	26,938,610	1,790,264
July 31	78,655,604	6,018,457	42,319,997	1,735,102	28,695,042	1,756,432
August 31	83,123,835	4,468,231	54,272,194	2,579,904	30,846,533	2,151,491
September 30	85,496,609	2,372,774	56,259,301	1,987,107	30,645,253	*201,280
October 31	88,349,550	2,852,941	57,569,832	1,310,531	30,031,070	*614,183
November 30	92,081,143	653,735	59,754,724	2,184,892	29,946,251	*84,819
December 31	*91,925,163	155,990	61,184,928	1,430,204	31,556,277	1,610,026
Total		27,662,427		20,256,358		11,937,431

*Shortage.

CALIFORNIA FIELD OPERATIONS BY DISTRICTS FOR YEAR 1923

District—	Wells Completed Number	Wells Completed Bbls. Dy.	Wells *Drg.	Wells Prod.	Wells *Abd.	New Rigs
Kern River	1	5	1	2,102	...	6
McKittrick	1	25	4	282	5	3
Midway-Sunset	140	34,290	51	2,180	24	131
Elk Hills	21	12,907	10	51	...	29
Lost Hills-Belridge	1	10	6	316	6	12
Coalinga	3	130	9	687	21	16
Wheeler Ridge	7	1,225	6	3	1	19
Watsonville	..	.....	...	6	...	....
Santa Maria	3	110	6	321	8	4
Summerland	..	.....	...	135	...	....
Ventura-Newhall	19	4,347	39	544	22	42
Los Angeles-Salt Lake	..	.....	1	648	6	....
Whittier	2	1,516	...	175	...	....
Fullerton	7	2,649	5	383	...	....
Coyote	5	720	5	147	3	4
Santa Fe Springs	281	684,741	172	168	49	273
Montebello	5	755	6	120	6	2
Richfield	10	2,653	12	175	7	4
Huntington Beach	120	98,313	94	193	27	96
Long Beach	250	455,978	227	222	73	314
Torrance	103	73,656	47	34	...	384
Compton	1	1,250	4	1	1	16
Miscellaneous	..	.....	57	....	35	72
Total	980	1,376,279	...	....	293	1,327

*Monthly average.

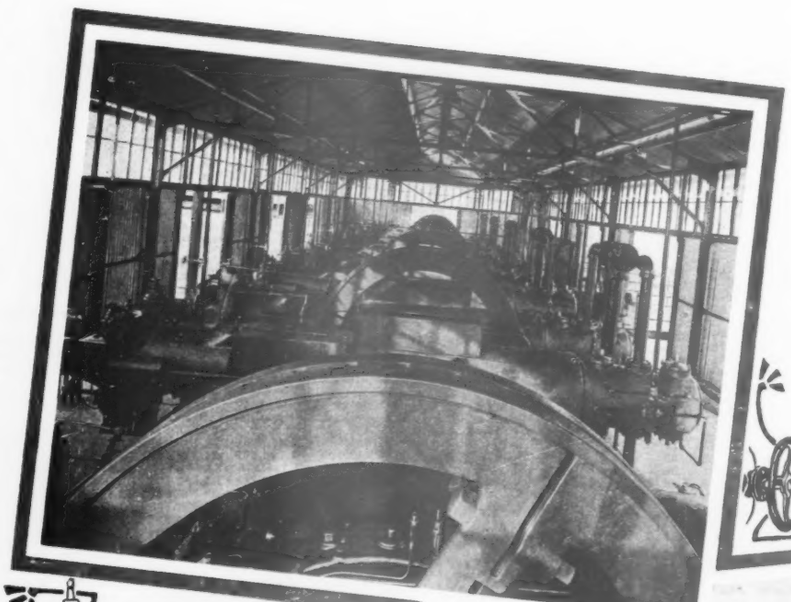
CALIFORNIA FIELD OPERATIONS BY MONTHS FOR YEAR 1923

1923—	Wells Completed Number	Wells Completed Bbls. Dy.	Wells Drg.	Wells Prod.	Wells Abd.	New Rigs
January	78	102,739	712	9,077	21	155
February	43	77,221	742	9,034	14	118
March	71	97,425	764	9,068	21	131
April	60	117,589	812	9,043	29	138
May	66	96,420	822	8,847	24	92
June	79	152,974	848	8,859	13	85
July	95	161,599	812	8,808	29	121
August	61	118,433	803	8,882	16	75
September	93	139,960	805	8,922	37	104
October	99	127,768	745	8,617	33	94
November	111	99,797	647	8,590	35	99
December	134	84,364	590	9,396	21	115
Total 1923	980	1,376,279	...	....	293	1,327
Total 1922	801	534,367	...	....	204	1,379
Total 1921	684	187,567	...	....	162	1,082
Total 1920	587	169,500	...	....	159	925
Total 1919	558	114,870	...	....	211	692
Total 1918	597	126,925	...	....	155	607
Total 1917	749	128,296	...	....	162	766
Total 1916	619	103,765	...	....	214	672
Total 1915	333	75,385	...	....	175	170
Total 1914	438	176,395	...	....	129	324
Monthly average 1923	82	114,690	759	8,928	24	111
Monthly average 1922	67	43,700	606	9,410	17	115
Monthly average 1921	57	15,631	536	9,425	14	90
Monthly average 1920	49	14,125	403	9,299	13	77
Monthly average 1919	47	9,572	340	8,774	18	58
Monthly average 1918	50	10,577	362	8,210	13	50
Monthly average 1917	63	10,690	361	7,398	14	64
Monthly average 1916	52	8,647	238	6,542	18	56
Monthly average 1915	28	6,282	153	6,016	15	14
Monthly average 1914	37	14,700	222	5,867	11	15

CALIFORNIA FIELD OPERATIONS BY FIELDS FOR YEAR 1923

	Montebello	Richfield	Huntington Beach	Long Beach	Torrance	Compton	Miscl.	Total	Year Prior
Kern River	.....	.....	.....	.....	.....	.....	.....	175,000	
McKittrick	.....	.....	.....	.....	.....	.....	.....	12,000	1876
Midway-Sunset	.....	.....	.....	.....	.....	.....	.....	13,000	77
Elk Hills	.....	.....	.....	.....	.....	.....	.....	15,227	78
Lost Hills-Belridge	.....	.....	.....	.....	.....	.....	.....	19,858	79
Coalinga	.....	.....	.....	.....	.....	.....	.....	40,552	1880
Wheeler Ridge	.....	.....	.....	.....	.....	.....	.....	99,862	81
Watsonville	.....	.....	.....	.....	.....	.....	.....	128,636	82
Santa Maria	.....	.....	.....	.....	.....	.....	.....	142,857	83
Summerland	.....	.....	.....	.....	.....	.....	.....	262,000	84
Ventura-Newhall	.....	.....	.....	.....	.....	.....	.....	326,000	85
Los Angeles-Salt Lake	.....	.....	.....	.....	.....	.....	.....	377,145	86
Whittier	.....	.....	.....	.....	.....	.....	.....	678,572	87
Fullerton	.....	.....	.....	.....	.....	.....	.....	690,323	88
Coyote	.....	.....	.....	.....	.....	.....	.....	303,220	89
Santa Fe Springs	.....	.....	.....	.....	.....	.....	.....	307,360	1890
Montebello	.....	.....	.....	.....	.....	.....	.....	323,600	91
Richfield	.....	.....	.....	.....	.....	.....	.....	385,049	92
Huntington Beach	.....	.....	.....	.....	.....	.....	.....	470,179	93
Long Beach	.....	.....	.....	.....	.....	.....	14,715	783,078	94
Torrance	.....	.....	.....	.....	.....	.....	4,116	1,245,339	95
Compton	.....	.....	.....	.....	.....	.....	2,135	1,257,780	96
Miscellaneous	.....	.....	.....	.....	.....	.....	4,000	1,911,569	97
	.....	.....	.....	.....	.....	.....	3,000	2,249,088	98
	.....	.....	.....	.....	.....	.....	1,500	2,677,876	99
	.....	.....	.....	.....	.....	.....	248,945	4,319,950	1900
	.....	.....	.....	.....	.....	.....	.....	7,710,315	01
	.....	.....	.....	.....	.....	.....	.....	14,356,910	02
	.....	.....	.....	.....	.....	.....	3,670	24,334,481	03
	.....	.....	.....	.....	.....	.....	39,392	29,548,634	04
	.....	.....	.....	.....	.....	.....	29,650	34,298,041	05
	.....	.....	.....	.....	.....	.....	10,090	32,623,229	06
	.....	.....	.....	.....	.....	.....	69,090	40,102,512	07
	.....	.....	.....	.....	.....	.....	125,475	48,306,737	08
	.....	.....	.....	.....	.....	.....	126,775	58,191,722	09
	.....	.....	.....	.....	.....	.....	58,970	77,697,568	1910
	.....	.....	.....	.....	.....	.....	61,350	83,744,044	11
	.....	.....	.....	.....	.....	.....	45,870	90,074,439	12
	.....	.....	.....	.....	.....	.....	27,375	97,867,184	13
	.....	.....	.....	.....	.....	.....	27,375	103,623,695	14
	.....	.....	.....	.....	.....	.....	27,375	89,566,779	15
	.....	.....	.....	.....	.....	.....	27,450	91,822,362	16
	.....	.....	.....	.....	.....	.....	27,375	97,267,832	17
	.....	.....	.....	.....	.....	.....	27,375	101,637,870	18
	.....	.....	.....	.....	.....	.....	27,375	101,221,784	19
	.....	.....	.....	.....	.....	.....	25,610	106,721,186	1920
	.....	.....	.....	.....	.....	.....	24,035	114,849,924	21
	.....	.....	.....	.....	.....	.....	20,338	139,626,876	22
	.....	.....	.....	.....	.....	.....	21,058	263,728,895	23
Total	26,173,879	48,081,953	87,446,544	3,319,479	157,698	1,131,484	1,867,137,149		Total

COOPER



Thirty-three Cooper Engines for California in the last six months—that is more convincing evidence of the merits of Cooper Engines than anything we might say about the engines themselves.

The first two of this type were installed late last summer by the Southern Counties Gas Company—chiefly on the strength of a letter written them by a large gas engine user in Oklahoma who is operating practically every make of gas engine and is therefore in position to give an unprejudiced opinion.

The orders for every one of the thirty-three have been sent us without personal solicitation. Cooper engines have sold themselves in California.

THE C. & G. COOPER CO.
MT. VERNON, OHIO

ENGINES

The photographs on both these pages are different views of Midway Gas Company's Santa Fe Springs California Station, which contains six Cooper 160 H. P. gas engines direct driving Cooper plate valve compressors. This is one of the best laid out compressor stations in the country and was built in record time. This Company installed their first large double-acting Cooper gas engines in 1913. They now have four 970 H. P. and three 485 H. P. Cooper Engines in their Taft, California, Station.

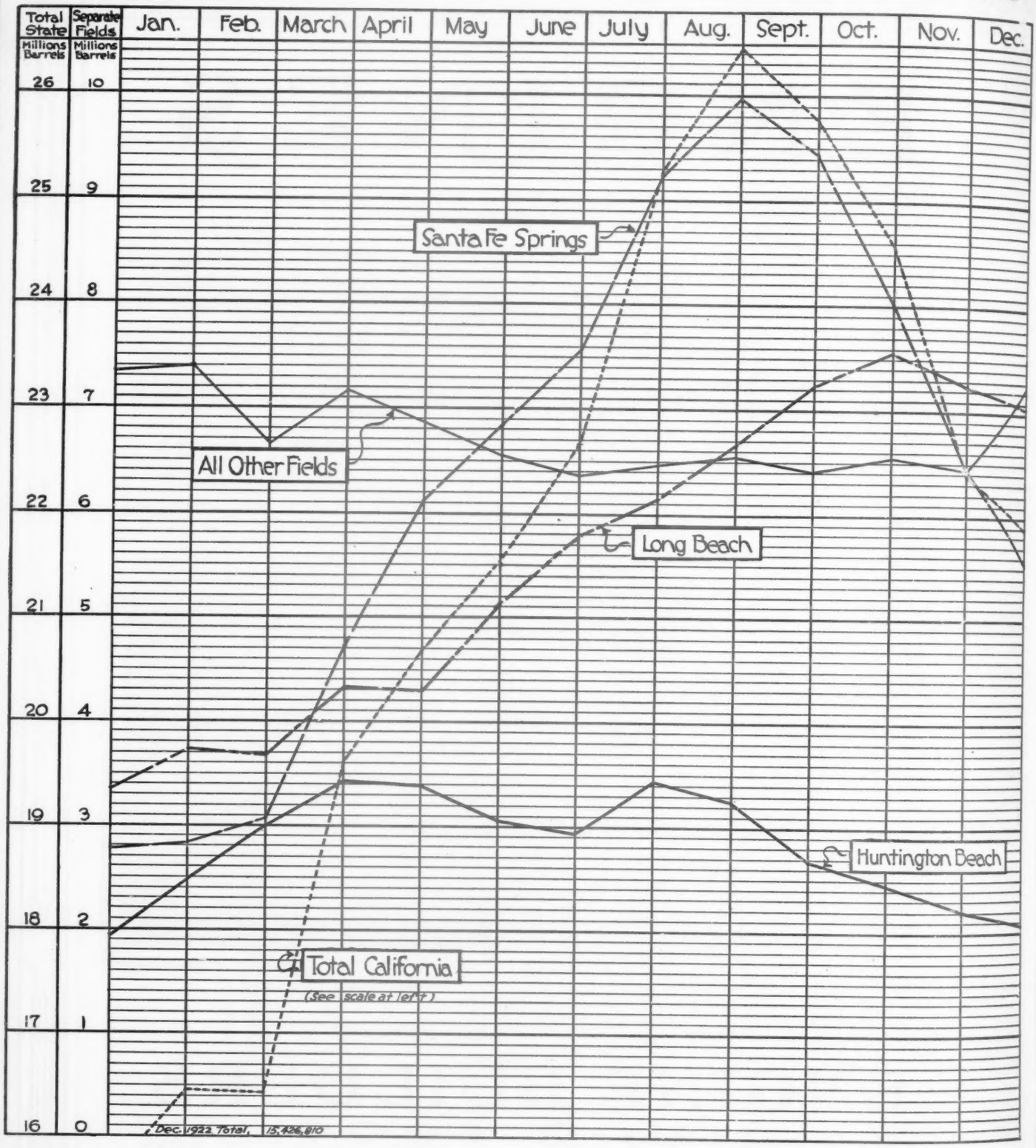
A Cooper Service Man who has had a number of years' training in actually building Cooper engines at Mt. Vernon is now permanently stationed at Los Angeles. With a complete stock of replace parts on the coast we are now organized to give the usual complete Cooper service to gas engine users in California.

ENGINE BUILDERS SINCE 1833

Branch Offices

504 KENNEDY BLDG, TULSA *1605 KIRBY BLDG., DALLAS*

California's Production, Showing the Output of the Three Flush Fields



Huntington Beach Development Work

	Completed No.	Output	Wells Drg.	Prod.	Abd.	New Rigs
1919—						
December			1			1
1920—						
January			1			
February			1			
March			1			
April			1			
May			1			
June			2			2
July			4			5
August	1	97	4	1		
September			4	1		
October	1	523	10	2		10
November			19	2		7
December			29	2	1	19
Total	2	620			1	43
1921—						
January	1	500	33	3		6
February	2	1,300	34	5	1	13
March	1	1,000	45	6	2	9
April	5	1,515	48	11	1	30
May	4	2,346	63	13	1	33
June	5	1,541	77	12		32
July	6	2,038	79	18		5
August	12	3,352	81	32	2	14
September	4	1,018	91	33		10
October	14	5,887	92	49	1	15
November	12	4,038	96	60		15
December	8	1,668	104	64	1	17
Total	74	26,203			9	199
1922—						
January	15	3,502	98	70	1	12
February	8	5,291	98	71	3	10
March	13	4,868	97	80	1	16
April	8	1,995	106	90		16
May	17	4,503	108	105	3	22
June	10	3,581	110	116		14
July	14	5,760	106	124	2	13
August	13	5,736	103	136	3	9
September	11	7,433	102	141	3	15
October	16	12,548	86	155	1	10
November	15	13,558	90	157	1	26
December	6	5,996	93	153		19
Total	146	74,771			18	182
1923—						
January	8	11,085	105	159		21
February	5	12,777	102	161	2	10
March	5	5,497	104	152	2	16
April	10	15,976	106	153	1	11
May	5	6,083	113	168	1	7
June	11	10,346	122	178	1	11
July	23	18,928	96	209	3	9
August	7	6,197	96	212		
September	9	2,289	97	214	5	
October	10	4,245	79	223	7	
November	9	2,480	66	223	5	
December	18	2,410	43	265		
Total	120	98,313			27	
To date	342	199,907			55	

NO PACIFIC-ASSOCIATED MERGER

SAN FRANCISCO, Cal., Jan. 26.—Paul Shoup, president of Pacific Oil Co., denies it will consolidate with Associated Oil Co.

Read What the "Big Men" Say

About the Great Economies of Creosoted Poles

YOU will then understand why we are so enthusiastic about the Creosoted Pine Pole for new construction and the reconstruction of old lines. The "Big Men" endorse them to the limit. Here's what they say:—

"Unquestionably the most perfect method of timber preservation is the injection of coal tar creosote into timber."

"This preservative treatment is profitable financially, the increased durability of the timber decreases the annual service charge."

"The experiments and investigations which have been conducted by the _ _ _ Co. have indicated that yellow pine can be economically used when thus treated—(closed cylinder process.)"

"Preservative treatment makes possible the use of poles of smaller butt diameter since allowance usually made for deterioration need not be considered."

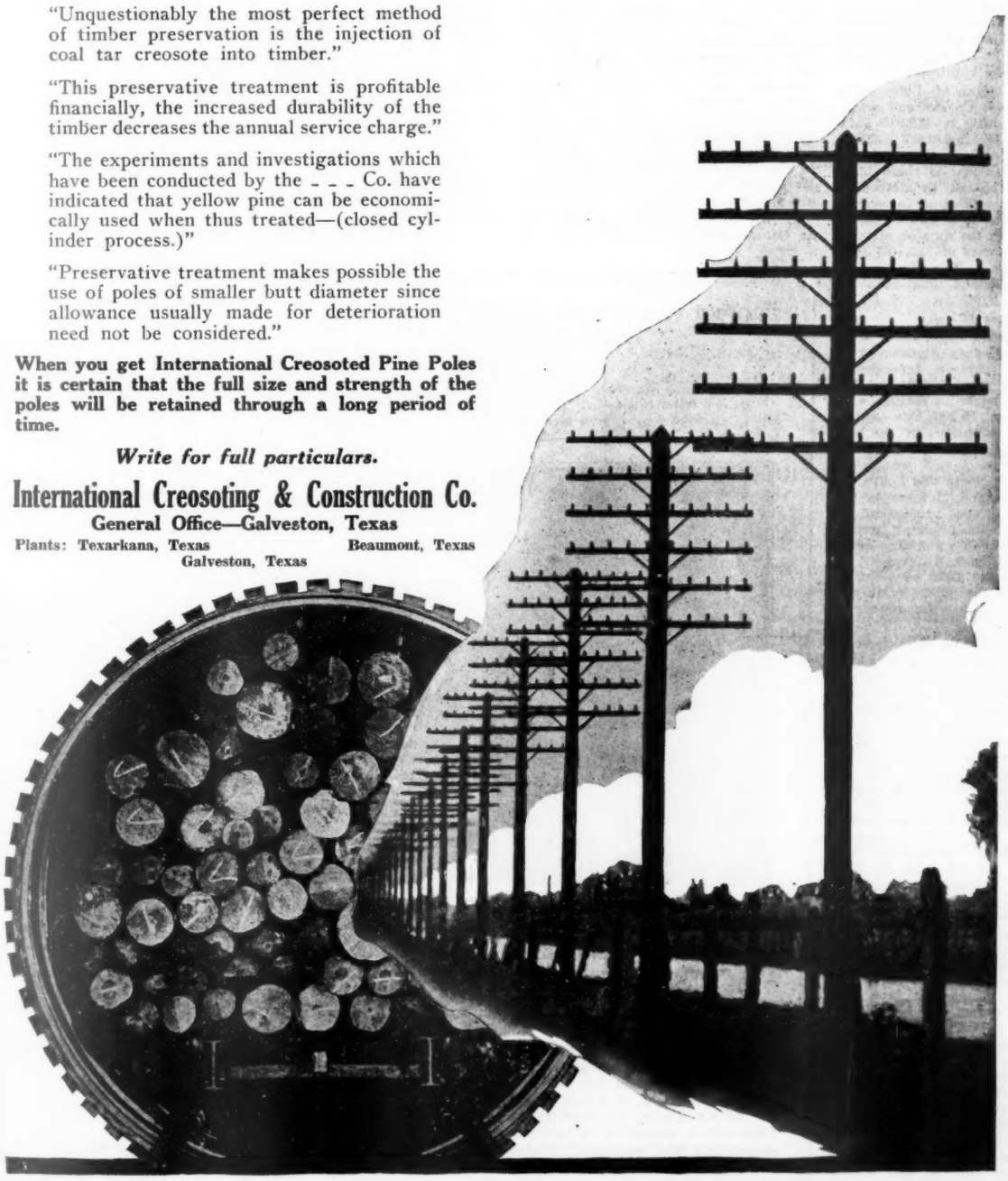
When you get International Creosoted Pine Poles it is certain that the full size and strength of the poles will be retained through a long period of time.

Write for full particulars.

International Creosoting & Construction Co.

General Office—Galveston, Texas

Plants: Texarkana, Texas Beaumont, Texas
Galveston, Texas



Gulf Coast Dullest Since Spindletop

Less Work Done From August and Wildcatting Practically at Standstill. Nearly 100 More Completions, Production Less

By P. L. McGreal

HOUSTON, Tex., Jan. 28.—The last half of 1923 will go into petroleum history as one of the dullest periods since the development of the Gulf Coast Pools. Less work was done since August than ever before since the opening of the Spindletop Pool. This is not so apparent in the production figures, or the monthly reports for the reason that the Luling and Laredo districts are included in the Coastal territory. Luling, Somerset and Milam Counties are light gravity districts, but the Webb-Zapata Counties are heavy gravity wells.

Wildcat work has been practically at a standstill since July last. The lack of activity rose from the flood of crude in the Powell Field and consequent depression in credit balance quotations, which made operating for deep sand crude in the Coastal Pools unprofitable.

During 1923 a total of 1,609 wells were completed in the Coastal and southwest districts, resulting in 428,945 bbls. new production. Of the total completions 492 are recorded as either dry or salt water wells. Some of these later became producers, either by deepening to another sand or packing off the water. Comparison with the 1922 figures shows an increase of 98 in the number of completions and a decrease of 123,152 bbls. in new production. The dusters or water wells number 47 less than in 1922.

Southwest District

The Luling, Laredo and shallow sand section of Milam County commenced to play a prominent part in development work early in the year, the Luling district reaching its height in August with 15 completions and 15,700 bbls. initial output. Limited extensions of the producing area were made late in the year, but around the close a well was developed by the United North and South Oil Co. on the Lopez land, 3 miles to the southwest, in advance of production. It was rated as a 200-bbl. producer, getting the sand at approximately the same depth as in the original field—2,150 feet. A number of deep holes have been drilled without success to the north, south and northeast. These indicate that the structure is narrow.

In the Laredo districts, the feature of the year was the development of a second sand in the Mirand-Schott section, at 1,940 feet, from which a very light gravity oil is produced. It tests 45 degrees. The wells are small, but old wells that have been producing the heavy grade crude at 1,700-1,800 feet, are being drilled deeper. The Aviator district was extended half a mile southeast and another big gasser was developed on the Barnsley ranch. Deep tests are being drilled north of Bruni and over in Zapata County in the old Mirando district. The Laredo districts suffered with the rest of the producing regions because of the low prices and light demand for the product and therefore very little work was done during the past four months. The operators there, however, are hopeful that improved conditions will soon be reflected in more activity and result in extensions of the present producing pools in both Webb and Zapata Counties.

An extension of the Orange Pool 1 mile southeast and the finding of a new deep sand by the Sun Co. with its No. 2 Brown, is the outstanding event of the year in the Gulf Coast region. This sand was found around 4,200 feet. The well came in late in November flowing 3,500 bbls. The Sun Co., Gulf Production. Rycade Oil Co. (Amerada Pet.), Brownie Babbittee Oil Co. and others are now drilling deep holes searching for the same pay. The northwest side of the Hull Dome was extended 2,000 feet in June, which resulted in a number of offsets being started. The Texas Co. and Vacuum Oil Co. extended the southwest side about the same distance with a small pumper. The Republic Production Co. became more active during the last three months of the year on its 800-acre Dolbear lease on the east side of the dome, materially increasing its production which is run to the Humble Pipe Line Co. on a contract that provides for a premium of 15 cents above the posted prices.

Operations in the once famous West Columbia Pool fell off to almost nothing during the year, especially during the last six months. The Texas Co. took up one of its 8-inch lines from that district to Clinton and the Humble Pipe Line Co. removed one of its long loops extending from the pool to the tank farm at Webster. A total of 65 wells were completed, or worked over, during the year, returning 62,080 bbls. new production, compared with 117 completions in 1922 and 104,570 bbls. initial output. More than 40 old wells were abandoned and the casing salvaged.

During the first months of 1923 tests at Damon Mound attempted to get off the shale beds on the south, southeast, east and northeast sides of the dome, but without success, and they were abandoned. In the Goose Creek Pool one hole was drilled to below 5,000 feet and abandoned. It was the Gulf Production Co.'s No. 25 Beaumont, in the bay. The same company's No. 1 Hirschi in the bay developed salt water at 4,560 feet. Other deep tests during the year include the Kishi Development Co.'s No. 2 Kishi-Lang, on the northwest side of the Orange Pool, abandoned at 4,585 feet, and the Gulf Refining Co.'s No. 2 Gray on the north side of the Vinton (La.) Field, abandoned at 3,980 feet. The Humble Co. drilled No. 1 Lovejoy on the northwest side of the West Columbia Dome at 4,535 feet and quit.

A slight extension of the old Sour Lake Pool to the northwest was noted in May, when the Lake View Oil Co. got a 700 bbl. well in No. 31 Hardin. The Rio Bravo Oil Co. made one-half mile extension of the old Saratoga Pool when its No. 104-B became a 75-bbl. pumper at 1,850 feet.

The Texas Co.'s No. 10 Robinson, located on the west side of the Blue Ridge Dome and 1,500 feet north of production, came in during June flowing 3,500 bbls. at 3,880 feet. Two offsets have not been completed. The Esperson estate drilled two holes on the southwest side to 3,900 feet and abandoned them.

Little of interest transpired in the South Louisiana pools during the year, other than a deep test in the Jennings Pool by the Coastal Fuel Oil Co., abandoned at 4,250 feet in salt water. A sand at 3,165 feet, north of production in the Edgerly Pool, showed for a 750-bbl. well, but soon went to water.

Semi-Pools

Such known domes as Big Hill, Jefferson County; Big Creek, Fort Bend County; Stratton Ridge, Brazoria County; Hockley, Harris County, and High Island, Galveston County, experienced flashes during the year that served to keep interest in them alive and expectant. In March, the Houston Oil Co. got a 75-bbl. well at Big Hill and in April a well flowed 2,500 bbls. for 18 hours and then sanded. At Big Creek, 7 miles south of Richmond, 10 wells were completed, with 1,650 bbls. new production. The Gulf Production Co. and Snowden & McSweeney jointly are doing the work there. No. 6 Davis came in flowing 1,000 bbls. at 3,900 feet and No. 3 Wheat 200 bbls. at 3,860 feet. Rich and associates are now trying for an extension south of the creek. The Freeport Sulphur Co. has a pumper at Stratton Ridge and the Texas Exploration Co. one on the north side of the Hockley Dome. The Sun Co., Gilbert and others and Coastal Production Co. got light wells at High Island that furnish enough oil for fuel for drilling rigs.

The Houston Oil Co. developed a gas well, estimated at 50,000,000 feet, on the Carwright ranch in Live Oak County. It has been mudded off and will be drilled deeper from 1,760 feet.

The following table gives the completions by districts for 1923:

SUMMARY

Completions, New Production and Dry Holes or S. W. Wells in the Gulf Coast and Southwest Fields During 1923

District—	Comp.	Init. Prod.	Dry & W.
Batson	37	1,616	11
Blue Ridge	11	6,610	2
Barber Hill	34	6,310	94
Big Creek	10	1,650	7
Big Hil	2	2,575	6
Damon Mound	47	4,033	13
Edgerly (La.)	15	2,393	4
Goose Creek	162	27,045	60
Humble	74	7,980	30
Hull	192	90,515	61
Jennings (La.)	18	3,700	9
Markham	7	....	7
Orange	181	104,335	41
Pierce Junction	30	6,035	16
Spindletop	21	535	7
Saratoga	9	283	2
Sour Lake	56	6,335	16
Somerset	101	889	3
Vinton (La.)	80	6,955	20
West Columbia	65	62,080	21
Luling	81	56,490	6
Laredo	159	19,315	8
Milam County	89	944	11
Miscellaneous	158	6,236	136
Total for 1923	1,609	428,945	492
Total for 1922	1,511	552,097	539
Difference	98	123,152	47
Increase completions			98
Decrease new production			123,152
Decrease dry holes			47

COMPLETIONS BY MONTHS

Gulf Coast and Southwest Districts

1923—	Comp.	Prod.	Dry
January	148	40,565	34
February	150	17,243	42
March	131	18,871	49
April	197	48,450	50
May	168	26,668	52
June	166	46,206	64
July	171	47,766	41
August	143	49,586	43
September	103	52,533	43
October	107	36,672	43
November	90	34,455	38
December	55	9,945	35
Total 1923	1,609	428,945	492
1922—	Comp.	Prod.	Dry
January	117	64,203	42
February	109	36,778	39

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PROPER VALUATION OF NATURAL GAS MUST DETERMINE SERVICE TO USERS

By Wm. B. Way

General Secretary, the Natural Gas Association of America

It is a trite truism that "coming events cast their shadows before them," but to attempt a prediction or an outline of what portends the natural gas business in 1924 would be basing an opinion upon extremely intangible premises.

Wm. B. Way

The individuals and companies engaged in the industry, from all surface indications, are not—strictly speaking—objects of congratulations on account of existing conditions, but while these selfsame conditions could be worse they could, by the same token, be better—much better.

Natural gas is, and has been, one of the strangest problems of our past and present day existence. Notwithstanding its 40 years of general use, no concrete form of valuing this most admirable fuel has been evolved by municipal authority, commission ruling, or court proceedings.

It must be admitted beyond dispute that proper valuation of gas and gas service must determine the relative prosperity or the lack of it for natural gas producers and distributors, and the kind of service that the companies may be able to furnish to consumers.

There is a growing demand for natural gas, and from the best authority obtainable the supply is decreasing, and the cost of production, based upon volume obtainable, is ever increasing.

In some sections of natural gas areas it is being recognized as a sound principle that, if natural gas service is to continue reasonably satisfactory for those now blessed by such service, a return must be had to the company sufficiently liberal to make the continuance of the service possible and profitable. While in sections of natural gas territory this principle may not as yet be recognized by constituted authority, the doctrine is sound; and while its adoption may be delayed its acceptance must ultimately come, because it is right, it is just, and it is equitable.

In our opinion, the industry may look forward to its activities during 1924 with a reasonable optimism, and by a more closely coordinated and cooperative effort accomplish that which will be best for the interests of the consumers, the distributors, and the producers of natural gas generally.

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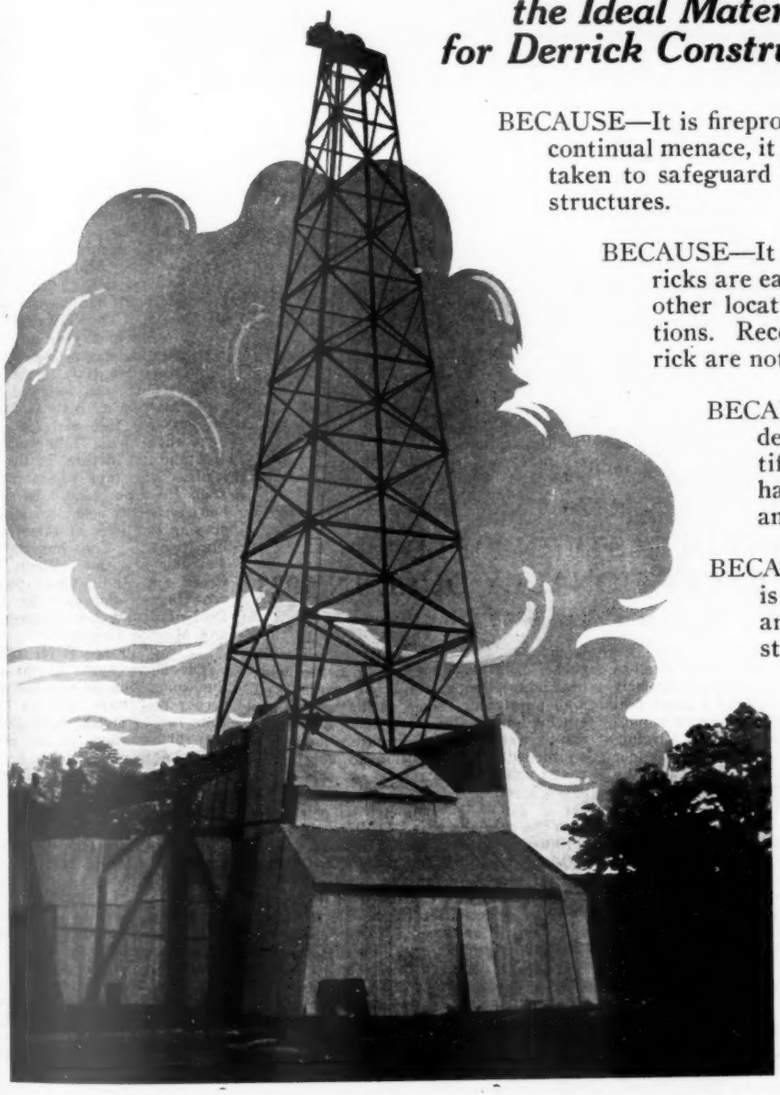

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1663

New Pools in Kentucky; Less Wildcatting

Developments in Cumberland, Monroe, Warren and Hopkins Counties and Owensboro District Help to Relieve a Hard Year

By Woodward Kirkpatrick and Vern T. Whitney

The operator in the Kentucky field looks back upon 1923 with mingled feelings. Much was accomplished, yet it was a hard year for every branch of the industry because of low prices for crude oil.

High lights of the year were the development of an extensive field in Cumberland and Monroe Counties and the completion of a pipe line through that field to the railroad at Glasgow; the extension north and south of the Davenport Pool in Warren County; results in the Owensboro district showing that a real field is being proven; a new pool discovered in Hopkins County.

Of great importance was the practical completion of the Indian Pipe Line from Scottsville, Allen County, through Warren County, through the Owensboro district and thence to the Indian Refining Co.'s plant at Lawrenceville, Ill.

Drilling fell off, particularly in the older pools. In Warren County, 392 wells were drilled in 1923 compared with 699 the previous year, while Allen County shows 497 compared with 666 in 1922, and Simpson dropped from 142 to 46. On the other hand Cumberland and Monroe show 115 completions in 1923 compared with 38 the previous year; Hopkins had 23 completions compared with one the previous year, and the Owensboro district 63 completions compared with 30 in 1922.

Decrease in Wildcatting

A decrease in wildcatting is also evident. New counties tested during the year are McLean, where five completions were reported dry; Marion, one dry; Hardin, two completions, one a duster and one with an encouraging showing of oil; Calloway, two completions reported dry, and Henderson also two dry ones. However, although this work brought little in tangible results, it did not entirely discourage the adventurous driller, for there is now a well drilling in McLean, one in Marion, one in Hardin and one in Henderson, and with the knowledge of the formations gained in last year's tests, better results are expected this year.

Production Fell Off

Oil runs from the field show only a slight decrease, averaging now about 120,000 bbls. per month as against about 140,000 bbls. a year ago. That it has held up so well is due to the fact that the Cumberland-Monroe and Owensboro districts have covered the decrease in Warren and Allen Counties, for a year ago Warren County was shipping over 80,000 bbls. per month and Allen around 60,000 bbls., compared with present shipments of 60,000 and 40,000 bbls., respectively. Barren County also shows an increase, now running about 6,500 bbls. per month.

It is worth noting that, although Warren and Allen show few completions in the past few months of the year in review, the production from these counties remained steady, showing a settled production comparing favorably with other eastern fields.

Reshaped Their Holdings

Not having to devote their time to drilling during the year, the producers have, in many cases, turned their attention to their equipment, with a consequent betterment of the physical appearance and efficiency of the leases. A feature was the abandonment of leases off structure and in nonpaying sections, often well equipped, sometimes extravagantly so—a heritage of the boom. Many of these leases were junked, but it is significant that the equipment was almost entirely used on other leases in the field. This of course, hurt the supply business, but it is believed that the junk man's days are over, for there remain very few abandoned properties.

Seeking Deeper Sands

Attempts were made last year to develop a deep sand in western Kentucky. The usual deep pay, geologically speaking, is in the Silurian formation. However, in southern Kentucky the "Trenton sand" of the Ordovician system is productive. The latter sand is known to extend north throughout the field, and it is in this horizon that geologists and operators have hoped to get a deep "pay."

In the test of E. M. Treat and others on the Lena Doyle farm in the Davenport Pool, drilled under most favorable conditions, gas and a trace of oil were found in the Trenton at 2,150 feet. On the Phillips farm, in eastern Warren County, a test to the Trenton was without result. About 2 miles east of Scottsville in Allen County a Trenton test also proved unproductive at around 2,650 feet.

A well in Cumberland County, near Sulphur Creek, drilled by the Kanawha Oil Co. on the Williams farm, completed at 1,445 feet, is said to be producing from the very lowest member of the Ordovician system. It started with 25 bbls. and after two months is making 15 bbls. If the log is correct, it shows a new and unexpected sand, and, as additional wells are now being drilled near it, it may prove a new horizon during the coming year.

Returning to the work in detail, Warren County shows important results in the extensions to the north and to the south of the old Davenport Pool. To the south, wells in the Browning section and west of Rockfield drilled below the shale have been particularly satisfactory. The best pay is found in a second sand below the shale, at 1,100 to 1,200 feet. The sand is thicker and seems more siliceous than in the old Davenport Pool, and so far the record shows wells with larger settled production. As typical, the No. 1 Price-Hall may be taken. It was drilled in May for 55 bbls. and is now making 15 bbls. To the north, the structure has been proven nearly to the county line by the New Domain's wells on the Lowe farm. West of the Davenport Pool, the Sandidge-Belcher section has been broadened by drilling on the Biddle, Francis, Wood and Shields farms.

During the early months of 1923, drilling in Allen County disclosed production almost continuously from the Gainesville Pool in the northern part of the county to the old pools south of Scottsville. The best of this territory is on the Burton farm and in its immediate neighborhood, where several good leases have been drilled and equipped during the year.

In Barren County a new pool was opened south and west of Glasgow on the Upper Bowling Green road. A number of leases are now producing in this pool and additional wells are being drilled. Several good gas wells were drilled in the city of Glasgow furnishing light and fuel for the city.

The Owensboro district, including Ohio and Hancock Counties, came into its own in 1923. Considerable work had been done previously, resulting in a few producers, but during the past year enough drilling was done to definitely place this district in the producing column. The two productive sands, known as the Jett and Barlow sands, have been correlated with known producing sands of the older Indiana fields. The known boundaries of the most important pool, the Pellville, have been extended southeast and southwest from Pellville 2 to 3 miles. There are now about 48 wells on the pump, which are producing approximately 6,000 bbls. per month. The Indian Pipe Line Corp.'s trunk line runs through this district.

The most important event of the year in western Kentucky was the development of the field in Cumberland and Monroe Counties. This, it is true, is an old field, but had been almost dormant for years. The Kerr well on Kettle Creek came in a year ago making about 500 bbls. per day at a depth of 187 feet. This started a rush to the field and the first report was followed by others of wells making as high as 2,000 bbls. per day at 300 feet and less. During the year there were 115 completions. The outstanding feature is the size of the wells. The pipe line through the field from the Cumberland River to Glasgow has recently been completed and the staying qualities of these gushers is being tested. The important producing districts are the Sulphur Creek, Bear Creek and Judio Creek pools in southern Cumberland and the Kettle Creek Pool along the line between Cumberland and Monroe Counties.

Prospects for 1924

The last months of the year brought the completion of the Indian Pipe Line across the State and the Paragon Pipe Line in the Cumberland district; it also brought advances in the price of crude and the announcement by the leading purchasing agency that it would discontinue a deduction from the posted price, that it had been making on many leases. These events brought cheer to the producer and gave him the incentive to begin the New Year with the resolution to do his part to make it a good one. Crude at the close of the year brought $1.40 per barrel—a price that will barely pay in this field. Indications point to additional advances, but in any event, it is safe to predict more drilling in new territory in 1924 than in any year since 1920. This will result from the construction of the new pipe lines.

The Indian Pipe Line crosses Allen, Warren, Butler, Ohio and Davies Counties. All of these counties and the adjoining counties close to the pipe line are underlaid with oil-producing formations. The only reason why some of them have not had a greater play in the past is that there was no outlet for the oil when it was found. In locating the line, this feature was considered by the builders, and it is their opinion that pools will be opened throughout the territory. At any rate, leases are now being acquired and announcements made of wells to be drilled along the line in the spring. The same may be said of the Paragon line running through Cumberlnad, Monroe, Metcalf and Barren Counties.

Work was just getting well under way in the Cumberland-Monroe field when winter set in. Bad roads and high water almost put a complete quietus on it. It

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OPERATIONS IN EASTERN FIELD EXCEPTIONALLY DULL IN 1923

By D. S. Wakenight

Unprecedented dullness prevailed throughout the entire year in the Eastern fields. The preceding year was extremely dull, but the one just closed a great deal worse. So far as the year's work applies to southwest Pennsylvania, West Virginia and southeastern Ohio, the sections under review, there were not as many wells by 117 completed, and the new production was 3,138 bbls. less than in 1922. There were 117 fewer dry holes and 221 more gassers completed than in 1922. The least production for any one month was in December, amounting to but 499 bbls. The largest production was in the month of January, amounting to 1,435 bbls. In the number of completions September and December were the two low months, totaling 170 each. June and August were the high months in which each completed 228 wells.

During the latter part of the year, December 14, the credit balance market began to advance and reached $3, which was 35 cents lower than at the beginning of the year. On February 1, a differential was posted in favor of Pennsylvania grade in the New York Transit lines and in the Bradford district in the National Transit lines. This difference of 25 cents in favor of the oil in these two lines was maintained to the close of the year. For Pennsylvania grade in the Southwest Pennsylvania, National Transit, Eureka and Buckeye lines at the beginning of the year was $3.35, and on January 18 began to advance and by February 15 reached $4. On April 11 the recession set in and did not stop until July 10 when the posted quotation was $2.75.

From the foregoing it can be seen that there was only a brief period when the market was high enough to make it an incentive to increase development work. Then followed a flood of new production from the Mid-Continent and California gusher fields and operations in the fields producing Pennsylvania oil were well nigh paralyzed. Some of the largest operating companies suspended all work, except where it was absolutely necessary or turned their attention to developing gas territory. A result of this kind of work can be seen in the increased number of gas wells completed as compared with the previous year. Drilling old wells to lower sands was also a feature.

Almost nothing has been done in the way of searching for new producing territory. Thos who continued to drill confined their activities to the old districts and few, if any, could justly claim an increase in production at the close of the year. The wells completed came in so light as to not more than supplant the decline in the old.

No Large Wells or New Territory

From the beginning to the close of the year no large wells were completed or new pools discovered. Several times wells were completed above the average size and it looked promising for a new pool. When subsequent tests were completed in the immediate vicinity they proved very light pumpers or dry holes. This left all of the producing districts without any marked activity during the entire year. In Ritchie and Gilmer Counties, located in the gas areas, operations were fairly active. The work completed by oil producers was very much on the routine order, drilling and getting light pumpers in old territory. When the cost to drill and equip these small wells is taken into account it is not in the least surprising that operators declined to continue development work. By this it must not be understood that there is no longer room for active operations in

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Fewer Completions in Oklahoma

Persistent Wildcatting Feature of Year's Development
Extension of Burbank and Opening of New Pools Follow

By C. D. Lockwood

Oklahoma fields during 1923 again broke all previous records for daily initial production when 5,833 completed wells contributed 1,277,936 bbls. of flush production. Although the number of completions for the year was less than that of 1922, by 315 wells, the total initial output was greater by 87,771 bbls. The only other year in the history of oil in the State that came near this high figure was 1915, when Cushing boosted the total over the million mark. In that year, 4,603 completions made a total initial output of 1,034,700 bbls.

Last year, the 5,833 wells finished in the State included 1,731 dry holes and 587 gas wells, leaving just 3,515 producing oil wells. This was a higher percentage of dusters than the figures for 1922 disclose, when the 6,148 completions included only 1,428 dry holes and 571 gas wells, the remaining 4,149 having produced oil. A comparison of the producers for the two years shows that 1922 brought forth 634 more than last year, while the difference in the number of completed wells was only 315. This naturally points to a higher initial output per well during 1923, due largely to the excellent producers in the Burbank, Bristow, Hewitt, Tonkawa and Wewoka fields that were brought in during the latter period. The average initial production per well for 1923, obtained by dividing the number of producing wells only the total initial production for the 12 months, was 363.5 bbls., while in 1922 the average was only 286.8 bbls., a difference of 76.7 bbls. By all odds the banner county in the State in the matter of new production during 1923 was Kay, which with its Tonkawa and Burbank extensions yielded 391,287 bbls. initially from 507 wells brought to completion. Although Osage County with 961 new wells and Creek County with 945 and Okmulgee County with 562, all had more completions than Kay County, the latter led its nearest competitor in the initial production column by nearly 100,000 bbls. Osage County was next with 295,143 bbls., followed by Garfield-Noble counties, with 201,700 bbls. from 437 completions, and Creek County occupied fourth place with 186,018 bbls. One reason for this line-up can be seen in the duster column. Osage County, while leading in the number of completions, and second in production, was fourth in dry holes, recording 179 failures. Creek County led with 310, Okmulgee County was second with 236, and the Okfuskee-Hughes-Seminole-McIntosh district was third with 219.

May Busiest Month

The month of May led all others, not only in the number of completions, but in the total amount of initial production as well. During that month, 754 wells were finished for 215,665 bbls., June occupying second place with 658 completions and 179,826 bbls. of initial production. April was practically the equal of June as a producing month, having completed 640 wells that made 151,449 bbls. at the start. The reason for May's supremacy was the race between Tonkawa and Burbank for honors as the State's premier oil producing section, which was hottest at that time, and also to gushers in Creek County, which made a good gain in that county.

The spectacular rise and fall of the Tonkawa Field in Noble and Kay counties, which reached a peak of 112,232 bbls. daily in May, and fell to 44,907 bbls. daily at the close of December, was one of the outstanding features. Burbank's rise and decline was more artificial, as the field could have maintained its output somewhere near the high mark set in July when the daily average was 121,764 bbls., and might possibly have exceeded that figure, had it not been for the voluntary shutdown agreement entered into by the companies operating in that district which caused suspension of drilling activities on more than 100 wells.

Results of Wildcatting

Due to the persistent wildcatting that was a feature of Oklahoma development during 1923, several new areas were opened up, one of the most important coming almost before the new year got under way. That was the extension of the great Burbank Field more than a mile and half across the line into Kay County, on January 12, when the Sapulpa Refining Co.'s No. 1 Thompson, in the southwest quarter of Section 15-27-5, came in for 400 bbls., later increasing to 1,019 bbls. after a shot. Many large producers followed this discovery, one of the best of which was the Comar Oil Co.'s No. 3 Clubb, in Section 10-27-5, which was good for 8,000 bbls. in the first 24 hours. This great field, which started the year with a daily average production of 84,641 bbls., and declined to 61,133 bbls. in the middle of March, came back to the impressive height of 121,764 bbls. on July 4, and then, due to the shutdown restrictions, gradually settled down to 72,711 bbls. daily from 1,113 wells at the close of the year.

The Tonkawa Field was extended early in the year and numerous excellent wells were completed, among which was the Healdton Oil & Gas Co.'s No. 5 Rence, in Section 11-24-1w, which flowed 2,065 bbls. initially, and the Comar Oil Co.'s No. 4-A Endicott, in Section 34-25-1w, which produced 5,118 bbls. in 16 hours and was completed for a 6,000-bbl. well. Slick & Comar's No. 2-B Endicott, in Section 35-25-1w, made 4,702 bbls. the first 24 hours, and T. B. Slick's No. 3 Endicott in the same section, was good for 4,528 bbls. the first day. The Comar Oil Co.'s No. 1-B Endicott, in Section 35-25-1w, was deepened in April and responded with an average production of 325 bbls. an hour for the first 24 hours afterward.

New Pool in Bristow

The development of new pools in the Bristow district of Creek County was one of the outstanding features of the year. A Gypsy Oil Co. wildcat in Section 8-15-8, early in January came in for 33 bbls. an hour, later falling to 400 bbls. daily. It was located about a half mile west and south of the Hiram Oil & Gas Co.'s big Dutcher sand well. This district also brought forth one of Oklahoma's largest initial producers in June, when the U. S. Cities Corp. and Lorraine Petroleum Co.'s No. 8 Deere, in Section 23-16-8, made 1,600 bbls. in the first 1½ hours, and put 12,000 bbls. in the tanks the first day. Among the other wells in this area with spectacular records was the Laurel Oil & Gas Co.'s No. 1 Knoll, in Section 22-16-8, which made an enormous initial flow and ran uncontrolled for days. When it was gauged it was still good for 8,000 bbls. daily, and was making 40,000,000 feet of gas. The Cortez Oil Co.'s No. 1 Wilson, a quarter of a mile north of the Laurel gusher, had a checkered career, producing 100 bbls. of oil an hour and 25,000,000 feet of gas on June 6. It had increased to 2,300 bbls. daily in September, when it suddenly died. Later it was revived but soon fell off again.

Other good Creek County wells included the Barnsdall Oil Co.'s No. 3 M. Bear, in Section 2-15-8, Bristow district, which gauged 4,214 bbls. the second day, and The Texas Co.'s No. 10 Hawkins, in Section 4-15-9, which was a 2,000-bbl. well. Numerous others which came in for better than 1,000 bbls. daily could be listed.

The Wewoka Pool

An excellent little pool was opened in Seminole County early in May by R. H. Smith's discovery well of the Wewoka district, his No. 1 Foster in the NW cor. SW NW, Section 33-8-8, which came in originally for 300 bbls. and increased about the middle of September to 2,800 bbls., when it was deepened to sand at 3,132-43 feet. Practically all of the major producing companies in Oklahoma purchased acreage in this vicinity, the best lease having been secured by the Producers & Refiners Corp. in the NW of the NW of Section 33-8-8. While this field turned out to be small, having been defined on nearly all sides at the close of the year, it was producing 18,683 bbls. of high gravity oil daily when it reached its peak during the week ended November 22, and was still good for 10,988 bbls. daily on December 26, from 22 producing wells. One of the largest lease transactions of the year occurred in this area when the Dixie Oil Co. (Standard of Indiana) purchased from R. H. Smith and associates, (the Oklahoma Oil Co.), 1,080 acres for a cash consideration of $3,000,000. The property at that time had a daily production of approximately 8,000 bbls. The only transaction of the year that exceeded this one was the purchase by the Mid-Kansas Oil & Gas Co. of Waite Phillips' property in northern Oklahoma, which involved $5,000,000.

The Graham Field also received considerable development during the year, although the proration which retarded all areas in the State was especially stringent in this part of Carter County. The field was extended on all sides and at the close of the year the deep sand was undefined in any direction. The discovery well of this deep horizon was the Healdton Petroleum Co.'s No. 3 Moyer, in Section 31-2s-2w, which swabbed 100 bbls. from sand at 3,374-85 feet. The Red Oak Trust Co.'s No. 2 Dings-Blalock, in the same section, found a still deeper sand at 3,430-55 feet, from which it was pumping 125 bbls. of 40 gravity oil. Many big producers and large gassers were brought in from the 2,000 to 4,000-foot levels. As the year closed, other tests for the deeper pay were in progress in practically all directions and some interesting developments are expected.

Another area in this section of the State that created considerable excitement during the year was around Wetumka in Hughes County. Just as 1922 was passing out, the Prairie Oil & Gas Co. & Wilhoit brought in their No. 1 Hully, in Section 5-9-10, the second well in the pool, and it made 250 bbls. to start. Later on, the Indiahoma Refining Co.'s No. 1 Hully, in the same section, was good for 100 bbls. an hour. In March, the Prairie's No. 3-C Gregory in

(Continued on Page 102)

FEWER COMPLETIONS AND MORE DRY MARKED 1923 FIELD WORK IN KANSAS

By C. D. Lockwood

Fewer wells were completed in the Kansas fields during 1923 than in any year since 1915, with the solitary exception of 1921, and a new low record for total initial production since 1915 was established. At the same time, the dry holes were in excess of the failures completed during either of the two previous 12-month periods.

The completion figures for 1923 show that 1,405 wells were finished during the year for an initial output of 61,372 bbls. Compared with the records for 1922, this is a decrease of 235 completions and 13,019 bbls., while it represents an increase of 25 completions over 1921 and a loss of 34,417 bbls. initial production. It is interesting to contrast the figures for 1923 with those for 1918 when both completions and production reached the peak. In that year, 4,671 wells were finished and the initial production was 342,872 bbls., making 3,266 wells and 281,500 bbls. more than last year.

The year was marked by the relatively large advance made by Greenwood County over all other producing areas in the State. More than twice as many wells were completed in Greenwood-Woodson Counties as there were in any other section, a total of 645, including 165 dusters and 2 gassers, having been finished in those counties for a total initial output of 42,248 bbls. That figure is more than five times the amount brought forth in Butler County, where 234 wells produced 7,287 bbls. initially. Montgomery, Wilson, Neosho and Allen practically passed out of view as centers of new development and Marion County slumped still further.

The average initial production per well, considering producing oil wells alone, was a little greater in 1923 than in 1922. During the latter 12 months, the 807 wells completed as producers, averaged 76 bbls. each at the start, while in 1922, the 1,057 producers yielded only 70 bbls. each at the beginning.

Both completions and initial production reached their peak during the month of May when 198 wells were finished for 11,182 bbls. April had almost as much initial production with 9,449 bbls. from 158 completions. The decline started in June and both completions and new production slumped off quickly almost reaching the vanishing point in December when but 32 wells were finished and the production from them amounted to only 745 bbls.

Five Promising Areas

After suffering through a year which was noted mainly for its shutdown movements, due to the depressed condition of the industry, the Kansas fields came back with several real kicks toward the close of the year and opened up five promising areas in wildcat territory. The most important of these, and the one which attracted by far the most attention, was in Russell County, in the western part of the State, where M. M. Valerius and the Waite Phillips Co. struck a sand carrying high gravity oil in their test on the Oswald farm, SW cor. SE, Section 8-12-15w. The first show was found at 2,510-20 feet and a gas sand spraying about 10 bbls. of oil at 2,795-2,802 feet. At 2,998 feet, another sand was picked up, and at 2,965 feet, the 6-inch hole filled up to 2,440 feet in three days. The well was swabbed every other day, making about 175 bbls. each time and was

(Continued on Page 102)

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Arkansas Distanced Louisiana in 1923

Opening of Norphlet and Louann Districts and Development of Stephens Area Features of the Year of Most Importance

By M. L. Vaughn

A record of the operations and development of the past 12 months in the North Louisiana and Arkansas fields presents about every extreme that can well be experienced in activities connected with the oil industry. Opening with moderate prices, fairly normal drilling activity, the succeeding months witnessed soaring market quotations, hectic excitement in the gusher territory around Smackover in Arkansas, with extravagant prices being paid for leases and accompanied by desperate efforts to provide pipe lines and marketing facilities. This period was succeeded by overproduction throughout the country, tumbling prices, panic and failure, with the usual cleaning out of small and weakly financed companies. Refineries had a particularly hard time of it and only the strongest of them survived or were able to keep their plants in operation.

Shortly after the first of the year, with production figures on a generally declining scale, credit balance quotations began to soar, and by the last of February light oil was bringing $2.40 a barrel, heavy oil $1.35 and Smackover heavy, which had been as low as 30 cents a barrel, was selling for 90 cents, with Smackover light at $1.35. During the four months following, drilling activity was at fever heat; gushers in the new Arkansas pools became of almost daily occurrence and the production from the Arkansas fields alone averaged 100,000 barrels a day.

While drilling activity was at its height, the tobogganing of crude oil prices began. Four reductions in April and three in May brought Smackover heavy down to 40 cents, where it remained during the rest of the year, causing deep depression among the operators and resulting in an almost general shutdown throughout the field.

Sensational Smackover

Sensational development in the Smackover territory resulted in shifting the main drilling activity from Louisiana to Arkansas, a record of the year's development showing 1,597 completions in the Arkansas fields, with only 266 in Louisiana, excluding the wildcats in both States. Of the Arkansas completions, 1,337 were oil wells with an aggregate initial production conservatively estimated at 814,796 bbls., 184 failures and 76 gas wells. The Louisiana completions numbered 276 of which 191 were oil wells with an initial production aggregating 18,273 bbls., 71 failures and 14 gas wells.

The most important developments of the year in Arkansas were the opening up of the Norphlet and Louann districts. Development of the Louann district followed the completion of the famous Burton well, brought in by W. G Burton on the Hughes lease, in Section 28-15-16, late in February, at 2,006 feet. The well came in with an initial production of 5,000 bbls., but later increased until it flowed at the rate of 2,400 bbls. an hour and settled down to 30,000 bbls. a day, constituting the banner well of the year. This well extended the Smackover heavy oil territory three-quarters of a mile northwest of previous production and encouraged drilling in that direction which resulted in the discovery of the light oil district around Louann.

The Norphlet district, north of El Dorado, was opened late in October, a succession of good producers gradually extending the producing territory until the El Dorado and Smackover Pools were practically connected.

Development of the Stephens district, west of Smackover and Louann, in Ouachita and Columbia Counties, was also an important feature of the year's development in Arkansas. Operations in this district following the completion of the discovery well in March resulted in the completion of 150 wells, of which 143 were producers, with an aggregate initial production of 5,969 bbls. and only seven failures. Production from this district is handled almost entirely by the Atlantic Oil Producing Co., which has a complete gathering system throughout the field with pipe line to Haynesville. Stephens production averages 3,000 bbls. a day, most of it testing 28 to 31 gravity. The total runs for the year from the Stephens district were 657,974 bbls.

Louisiana at Low Ebb

Louisiana development was at a low ebb throughout the entire year, the shallow sand district near Bellevue, in Bossier Parish, proving the most valuable asset in Louisiana's field development. The wells in this district are completed at an average depth of 350 feet, producing a heavy oil rich in lubricating qualities. During the year, the second of its existence, the Bellevue district produced 2,158,839 bbls., never bringing less than 75 cents a barrel and from that up to $1.35. Completions in this district numbered 108, of which 91 were producers, with an aggregate initial production of 8,775 bbls., 13 failures and four gas wells.

Caddo development was confined chiefly to tests in the deep sand, led by the Dixie Oil Co.

Prospects for 1924

Prospects for the coming year are considered most encouraging. No limit has yet been defined for any of the Arkansas Pools and with the upward trend in prices now in progress, a steady increase in drilling activity is expected.

In addition to the continued development of the Arkansas pools, prospects in North Louisiana have been brightened for the coming year by the recent discovery of two new pools, neither of which were ushered in with any gusher accompaniment, but which show possibilities of no little importance.

The most promising of these pools is near Oakland in the north end of Union Parish, where Palmer & Davidson have a bona fide producing well on the Frost Johnson Lumber Co. lease in Section 17-23-1e. The well created considerable excitement early in December when oil was discovered at a depth of 2,217 feet. After bailing, the well stood 1,500 feet in oil, testing 36 gravity, with 500 feet of salt water and considerable gas. The well kept slopping over at the rate of five or six barrels a day and during the month of December was opened up and flowed for short periods at the rate of 25 barrels an hour. As a regular pumper it is not believed that it will make more than 85 barrels a day but an intensive drilling campaign is on in the vicinity and much is expected of the new pool.

The second new oil field in prospect is near Cotton Valley, in Webster Parish, the discovery well being that of the Oil Field Gas Co. on the Merrit lease, in Section 14-21-10. The well was completed on the 18th of November, making 25,000,000 feet of gas with a heavy spray of oil. After being shut in for three weeks, the well was opened up and made one good head of oil followed by a resumption of the gas flow with its accompanying spray of oil. It is estimated that with separating equipment, the well will produce from 200 to 300 barrels of oil and 18,000,000 feet of gas.

Completions by Months and Districts

Bellevue

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	0	0	0	0	0
February	1	0	0	1	300
March	5	1	0	6	170
April	11	0	0	11	490
May	10	0	0	10	2,435
June	6	2	0	8	105
July	9	2	1	12	1,160
August	7	1	2	10	1,700
September	10	2	0	12	510
October	15	2	0	17	1,420
November	7	3	1	11	135
December	10	0	0	10	340
	91	13	4	108	8,775

Caddo

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	4	1	0	5	140
February	6	2	0	8	495
March	6	5	1	12	1,415
April	3	0	0	3	115
May	8	0	2	10	690
June	7	5	0	12	775
July	4	3	0	7	100
August	3	3	1	7	435
September	1	2	0	3	300
October	6	1	0	7	1,650
November	5	1	0	6	360
December	3	0	0	3	100
	56	23	4	83	6,575

Claiborne

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	2	2	0	4	150
February	5	1	0	6	470
March	9	2	0	11	665
April	2	0	0	2	170
May	6	0	1	7	450
June	2	1	0	3	105
July	5	4	0	9	335
August	1	2	0	3	75
September	0	1	0	1	0
October	1	2	0	3	75
November	2	3	0	5	128
December	0	2	0	2	0
	35	20	1	56	2,518

De Soto and Red River

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	1	0	0	1	60
February	1	0	0	1	35
March	4	0	1	5	170
April	0	2	1	3	0
May	0	0	1	1	0
June	1	2	0	3	55
July	1	2	0	3	50
August	0	2	1	3	0
September	0	1	0	1	0
October	1	0	1	2	40
November	0	4	0	4	0
December	0	2	0	2	0
	9	15	5	29	410

Union County, Arkansas
Including Smackover and El Dorado

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	6	4	1	11	870
February	29	1	4	34	19,025
March	42	9	3	54	48,083
April	62	8	3	73	44,750
May	58	2	9	69	35,015
June	91	13	3	107	124,725
July	124	26	5	155	106,500
September	70	15	0	85	26,650
August	112	19	3	134	47,585
October	43	6	3	52	20,915
November	36	12	0	48	30,890
December	19	4	2	25	6,410
	692	119	36	847	505,567

Ouachita County-Smackover District

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	74	0	10	84	168,700
February	37	8	4	49	38,300
March	0	0	1	61	65,000
April	51	0	12	63	39,661
May	64	23	2	89	37,500
June	62	12	7	81	34,000
July	27	5	2	34	4,000
August	19	3	1	23	4,425
September	16	2	0	18	2,750
October	20	2	0	22	6,725
November	40	1	0	41	8,540
December	32	2	1	35	6,000
	502	58	40	600	313,300

Stephens District, Columbia and Ouachita Counties, Arkansas

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	0	6	0	6	0
February	0	0	0	0	0
March	0	0	0	0	0
April	9	2	0	11	665
May	10	0	0	10	600
June	11	1	0	12	625
July	35	2	0	37	1,700
August	25	0	0	25	1,000
September	24	1	0	25	925
October	13	1	0	14	520
November	15	0	0	15	575
December	1	0	0	1	35
	143	7	0	150	5,969

Louisiana Wildcats

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	4	8	0	12	190
February	1	1	10	12	15
March	3	2	12	16	60
April	1	6	5	12	20
May	2	12	4	18	55
June	0	5	10	15	0
July	0	4	10	14	0
August	0	10	16	26	0
September	0	5	13	18	0
October	0	6	18	24	0
November	0	3	17	20	0
December	0	4	8	12	0
	10	66	129	205	337

Arkansas Wildcats

Month—	Oil	Dry	Gas	Total	Initial Prod.
January	1	3	0	4	20
February	2	1	0	3	85
March	6	3	0	9	635
April	0	5	0	5	0
May	1	0	6	7	75
June	0	6	1	7	0
July	0	7	1	8	0
August	1	5	0	6	235
September	1	9	1	11	100
October	2	3	0	5	305
November	0	2	0	2	0
December	3	2	0	5	450
	17	46	9	72	1,905

Summary

Month—	Oil	Dry	Gas	Total	Initial Prod.
Bellevue	91	13	4	108	8,775
Caddo	56	23	4	83	6,575
Claiborne	35	20	1	56	2,518
De Soto and Red River	9	15	5	29	410
Union Co., Ark.	692	119	36	847	505,567
Ouachita Co. Ark.	502	58	40	600	313,300
Stephens	143	7	0	150	5,969
La. Wildcats	10	66	129	205	337
Ark. Wildcats	17	46	9	72	1,905
	1,555	367	228	2,150	845,311

Production Figures.

Month—	Bellevue	Caddo	North Louisiana De Soto & Red River	Elm Grove	Haynesville	Homer
February	154,504	310,828	155,876	39,928	946,176	292,320
February	154,504	310,828	155,876	39,928	946,176	229,320
March	196,261	370,915	166,842	41,664	1,026,007	319,517
April	193,350	343,080	158,130	38,400	973,080	312,090
May	178,994	360,840	154,441	43,090	1,005,671	342,209
June	149,790	336,930	152,370	38,580	899,490	297,930
July	181,629	327,187	155,279	42,067	735,072	317,688
August	188,418	347,138	153,977	34,472	708,908	305,877
September	172,910	314,400	144,090	33,090	630,990	284,280
October	198,369	328,135	150,567	35,867	632,338	279,155
November	170,100	318,060	140,460	29,670	697,680	254,220
December	189,095	333,696	171,240	33,080	695,800	283,105
Total	2,158,899	3,960,126	1,881,584	466,749	10,107,567	3,629,453

Production Figures, Arkansas, 1923

Month—	El Dorado and Smackover in Union County	Smackover in Ouachita County	Stephens
January	678,435	2,544,170	10,364
February	505,644	2,235,353	11,201
March	651,930	2,168,667	13,733
April	582,840	2,290,980	19,470
May	602,919	2,616,400	31,837
June	559,920	2,781,630	49,035
July	606,856	3,042,247	64,635
August	587,853	2,614,758	89,329
September	556,020	2,527,200	82,630
October	529,170	2,502,495	87,006
November	520,320	2,372,880	72,200
December	567,415	2,333,795	116,040
Total	6,948,322	31,041,567	657,974

Summary—Louisiana

Bellevue	2,158,899
Caddo	3,960,126
De Soto and Red River	1,881,584
Elm Grove	466,749
Haynesville	10,107,567
Homer	3,629,453
Total	22,194,378

Arkansas

El Dorado	6,948,322
Smackover	31,041,567
Stephens	657,974
Total	38,647,863

North Louisiana	22,194,378
Arkansas	38,647,863
Total	60,842,241

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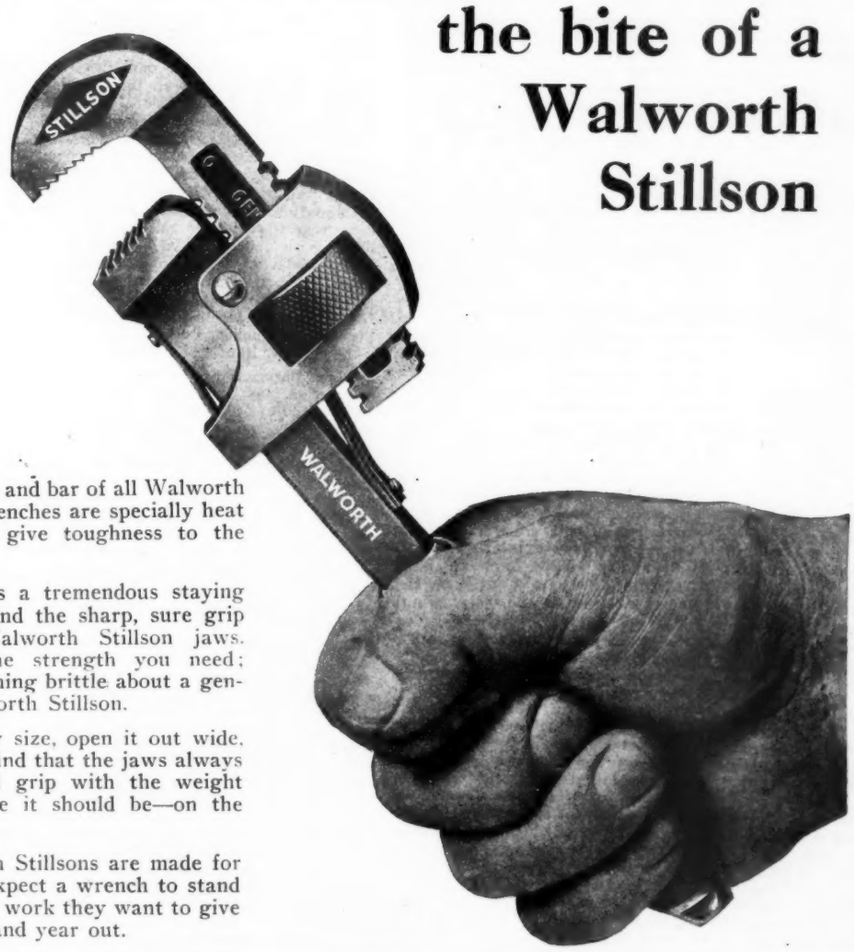

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1923 Big Year in California Oil History

For First Time Crude Was Shipped in Large Quantities to Eastern Markets. Production Nearly Doubled in 12 Months

By L. P. Stockman

Oil has been mined and pumped in California for over 50 years but it is doubtful if any other year has meant more to the industry in general than 1923.

Huge concrete reservoirs were built and numerous steel tanks erected in an effort to tide the flood and, although over 50,000,000 barrels of additional storage facilities were provided it only helped temporarily. One company even tried to pump Santa Fe Springs crude into its wells in another field hoping to recover it at a later date. Had the experiment been successful, an ideal means of storage would have been provided but unfortunately this ingenious plan would not work out.

The seriousness of the heavy production during 1923 was realized early and resulted in the organization of the Southern California Producers Committee. Following its organization, the committee elected S. A. Guiberson chairman and its representatives immediately went to work. Producers arbitrarily curtailed their production at the request of the executive committee and, while not all of the independent operators joined the movement, this restriction helped the marketing companies to overcome a serious situation.

Tank Farm at Watson

The tank farms of the General Petroleum, Pan-American, Union, Associated and Shell Oil companies at Watson show the valiant efforts made to cope with the situation. At this point, only a few miles from Los Angeles harbor, both steel and concrete reservoirs have been constructed. All of the major companies expanded during the year, the Associated entering Southern California for the first time. This territory had formerly been alloted to the Amalgamated, a subsidiary, but with the rapid growth of Santa Fe Springs and Long Beach, together with changing conditions, the Associated actively entered these fields. Acreage was secured and crude purchased in the open market.

This company had no means of disposing of this new production and it was therefore necessary to construct tankage and lay pipe lines in order that it might be transported to its Avan refinery near San Francisco. Within a short time the company had erected some 15 steel tanks at Watson and connected this point with the local harbor and each field. Docking facilities were rushed to completion and within a short time after entering this territory the company was moving crude to its refinery. Following out its expansion program the company erected several service stations in the vicinity of Los Angeles and will probably add to them during the coming year.

The Shell also benefited very materially by the opening up of Santa Fe Springs and Long Beach. This company did not have a pipe line system either and it also constructed tankage at Watson and laid the necessary pipe lines to the local harbor. The company entered into an agreement with the Union Oil Co. and used the latter's lines pending the completion of its own. The Shell started to erect a refinery at Watson to take care of its Southern California requirements, but work was temporarily shut down early in the year and attention devoted exclusively to the construction of tankage. The plant was finished later in the year and has been in operation for the past several months. The company has not overlooked the necessity of increasing the number of its service stations and has constructed nearly a hundred in Southern California alone. The Standard and Union already had elaborate pipe line systems in this part of the State and it was therefore not as much work for them to connect up Santa Fe Springs and Long Beach. Both companies increased their storage facilities substantially and were the principal shippers of crude to Atlantic and Gulf Coast ports.

Pan-American Enters Field

The General Petroleum Co., soon after the discovery of Santa Fe Springs, realized its possibilities and began one of the most intensified drilling programs ever undertaken. Storage was constructed and for several months this company experienced a rapid growth and was running the largest amount of crude out of the field. The latest company to enter Southern California was the Pan-American. Its first drilling in this section of the State was at Long Beach, where a substantial production was built up on a lease secured from the Union Pacific Railroad. Storage facilities aggregating several million barrels, together with a complete refinery, were constructed at Watson, and this point was at the same time connected up with the production centers. The company is not only running its own crude through its refinery but is purchasing additional oil in the open market. In addition to its local refinery, the Pan-American is running its New Orleans plant on California crude, the company's tankers being frequent callers at Los Angeles harbor.

Owing to the overproduction and cost of transporting crude from California to eastern points, prices were reduced very substantially and both crude and refined oil reached the lowest point in years. Notwithstanding this heavy cut, however, there has been no cessation in the amount of wildcatting and, as a result, Compton was opened up by the Union Oil Co. in September. Several other areas being prospected look exceptionally good at the present time and it would not be surprising to see another field or two opened up during the coming year. Deep sand at Long Beach was proven productive during 1923, and many big wells have been completed since the discovery. As the result of the extension of the Torrance Field in the direction of Lomita, operators transferred their attention to this field during the middle of the year. This particular section of the field has been responsible for the increase in production of this district.

Years	Average per bbl.	Years	Average per bbl.
1876-86	.....	1900	$0.959
1887	$2.00	1901	.384
1888	2.00	1902	.348
1889	1.214	1903	.303
1890	1.250	1904	.279
1891	1.240	1905	.245
1892	1.458	1906	.289
1893	1.293	1907	.37
1894	1.359	1908	.522
1895	.803	1909	.554
1896	.938	1910	.49
1897	1.003	1911	.48
1898	1.057	1912	.45
1899	.993	1913	.50

Production Doubled

Production during the year 1923 totaled 263,728,895 bbls., an average of 723,416 bbls. daily, as compared with an output during the previous year of 139,626,876 bbls., an average of 382,539 bbls. daily. The output during the past year was nearly double that of the corresponding period just previous. The largest contributors to this enormous production were Santa Fe Springs, Long Beach, Huntington Beach and Midway in the order named. The yearly output at Santa Fe Springs was 79,781,275 bbls., an average of 218,579 bbls. a day.

The largest monthly production in this field was during August, 1923, when the daily output reached 322,522 bbls., and the lowest production since that date was during December of the same year, when the output dropped to 178,504 bbls. The field had a quick rise, followed by a rapid decline, and today this prolific field is producing only about 140,000 bbls. daily. The total production of Santa Fe Springs to date is only 6,746,917 bbls. less than the total output of the Maricopa Field, opened up during 1900, and exceeds the combined production to date of Whittier, Richfield, Torrance, Summerland, Wheeler Ridge and Elk Hills.

The largest number of new rigs was erected during November, 1922, which showed a total of 49, while May, 1923, is credited with the largest number of drillers, 212. The greatest number of new wells was completed during November, 1923, although the 43 brought in during this month did not account for as much new production as June of the same year when 99,896 bbls. of new production was added. The average daily well production was highest during April, 1923, and the average, which had steadily climbed to 2,193 bbls. at that time, has since declined to 581 bbls. during the past month, December.

Output at Long Beach

Long Beach, which ranked second in production, has been a far more consistent producer than Santa Fe Springs and its total output will probably pass that of Santa Fe Springs within the next six months. Long Beach, like Santa Fe Springs, was opened up during the latter part of 1921 and, although only 75,588 bbls. were produced during this year, 1921, it had jumped to 18,560,595 bbls. in 1922 and had increased with added development work to 68,810,361 bbls. during 1923. The highest monthly production was attained by Long Beach during October, 1923, when the daily average output was 244,527 bbls., and the lowest since that date was during December when the average had decreased to 227,178 bbls. During the three-year existence of Santa Fe Springs and Long Beach, the former has produced a total of 91,022,446 bbls., while the latter has shown an output of 87,446,544 bbls. The greatest number of new rigs was erected in Long Beach during October, 1922, while October, 1923, with 36 new wells to its credit, leads the completion list, although these wells did not register the largest amount of initial production. January, 1923, with 65,569 bbls. of new production added was the premier month for new production. The daily well production reached 933 bbls. during June, 1922, and then dropped to 770 bbls. during November of the same year. A few months later following the discovery of deep sands it started to increase again and reached a maximum of 985 bbls. during June, 1923. It has since declined to 691 bbls.

Huntington Beach

Huntington Beach, although not a spectacular field, is credited with a production during 1923 of 34,355,642 bbls., and, while this figure seems small in comparison with the output of Long Beach and Santa Fe Springs, only one other field has produced more oil in a single year. Midway, with an output of 37,479,228 bbls. during 1914, is the only district to show a larger production during a 12-month period. Huntington Beach, opened up during the latter part of 1920, is credited with an output of 38,116 bbls. during that year, 2,518,812 bbls. during the following year, 11,169,383 bbls. during 1922 and 34,355,642 bbls. during the past year, 1923. In the four years of its existence, Huntington Beach is credited with a total production of 48,081,953 bbls. The greatest amount of development work was probably done during the early part of 1921, although the resulting production was not felt until some time later. During April, May and June, 1921, a total of 95 new rigs was erected, principally as the result of promiscuous selling of units and stock in miscellaneous companies. July, 1923, with 23 new wells completed with an aggregate initial daily output of 18,928 bbls., was the largest single month, appearing on the completion list, although the year 1922 with 146 new wells brought in showed a higher average than 1923. The latter year, however, exceeded in the amount of new production added. The highest daily well production was during April, 1923, and, although it took the field over two years to reach this average of 740 bbls., it has declined to 253 bbls. in less than eight months.

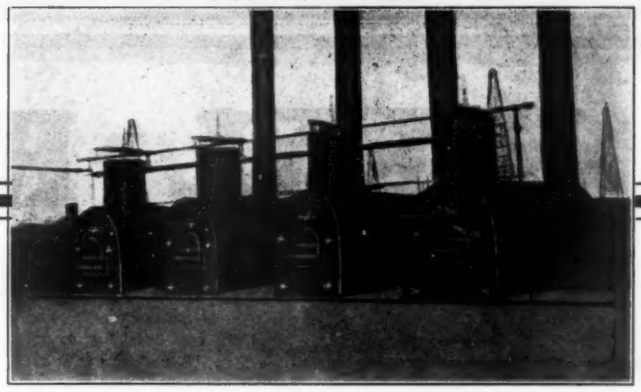
Older Fields Fell Off

Practically all fields in the San Joaquin Valley show a smaller production during 1923 than during 1922, principally because of the overproduction in Southern California, which resulted in the closing down of many wells in the older fields of the State. Notwithstanding this restriction, however, Midway shows a total output during the year of 22,567,392 bbls. Elk Hills and Coalinga, on the other hand, each show a decrease of nearly 4,000,000 bbls. from the previous year. Among the newer fields, Torrance is credited with a total production of 190,785 bbls. during 1922, and 3,128,694 bbls. during 1923, a total for the two years of 3,319,479 bbls. Compton is found on the production list for the first time during 1923 and, although only 157,698 bbls. of crude were produced, it is the total output of only one well, and with subsequent development work and additional drilling it will undoubtedly show a substantial output during the coming year, 1924. Torrance, it is believed, will be a long lived field of good pumpers and will probably not show as great an output during 1924 as Compton, although the former already has over 100 producing wells, while the latter has only two. Compton, unless restricted, should develop a substantial production during the latter part of 1924.

The highest monthly State production on record occurred during September, 1923, when 858,750 bbls. a day were produced. It had increased from 530,885 bbls. during January of the same year to the high peak during September, but has since dropped to 706,427 bbls. daily during December. The present daily production is about 680,000 bbls., which, judging by recent developments, will be substantially reduced during the next month or two.

Consumption, which averaged 484,000 bbls. daily during January, was highest during September, when 779,657 bbls. were consumed and shipped. From this high point it dropped to 700,756 bbls. daily during October and had settled during December to 711,459 bbls. Unquestionably there has been a big increase in the normal consumption of the State, but tanker shipments to Atlantic and Gulf Coast ports have been the principal factor throughout the year in maintaining this high daily average. California is fast returning to normalcy and decreased consumption will naturally result when shipments to Atlantic and Gulf Coast ports have been reduced to a minimum.

(Continued on Page 102)



Actual Photo Showing a Battery of Four 45 H. P. F. & T. Non-Code Boilers Being Operated by the Tidal Oil Company on Their Thompson Farm, Near Corisicana, Texas

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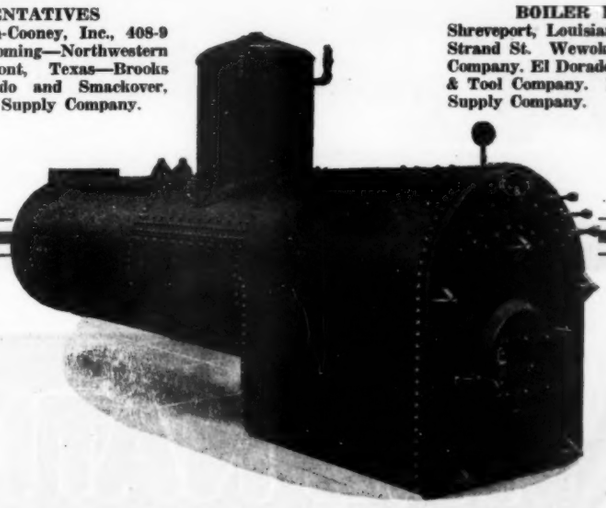
Shreveport, Louisiana—Oil City Iron Works, 204 Strand St. Wewoka, Oklahoma—Colonial Supply Company. El Dorado, Kansas—El Dorado Machine & Tool Company. Fort Worth, Texas—Longhart Supply Company.



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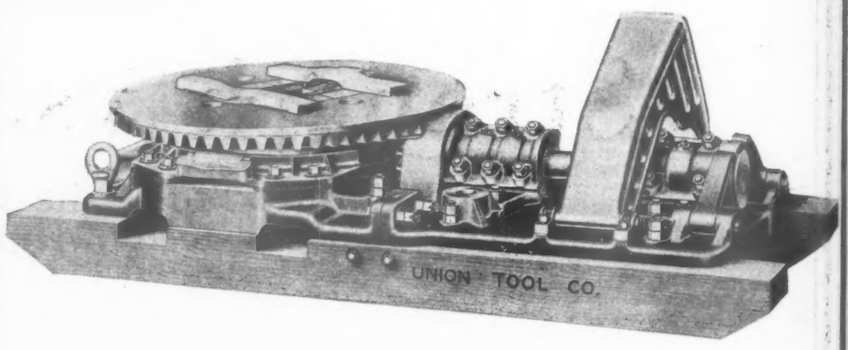
IDEAL ROTARY

No. 10 IDEAL ROTARY



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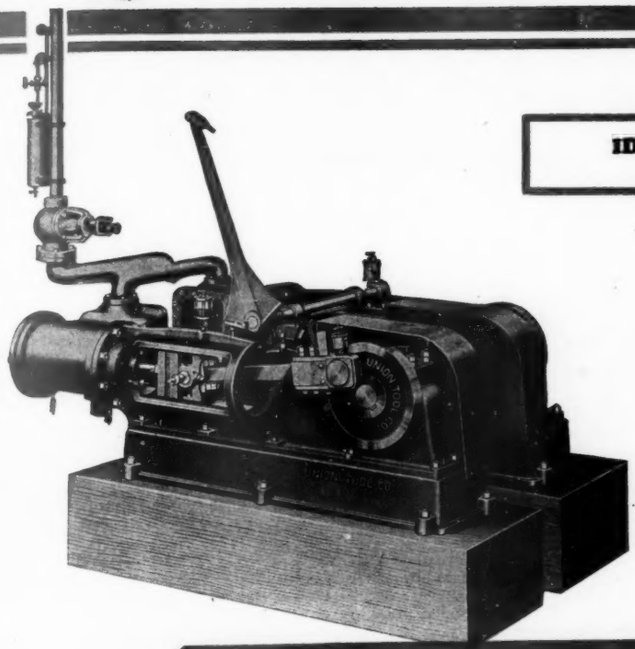
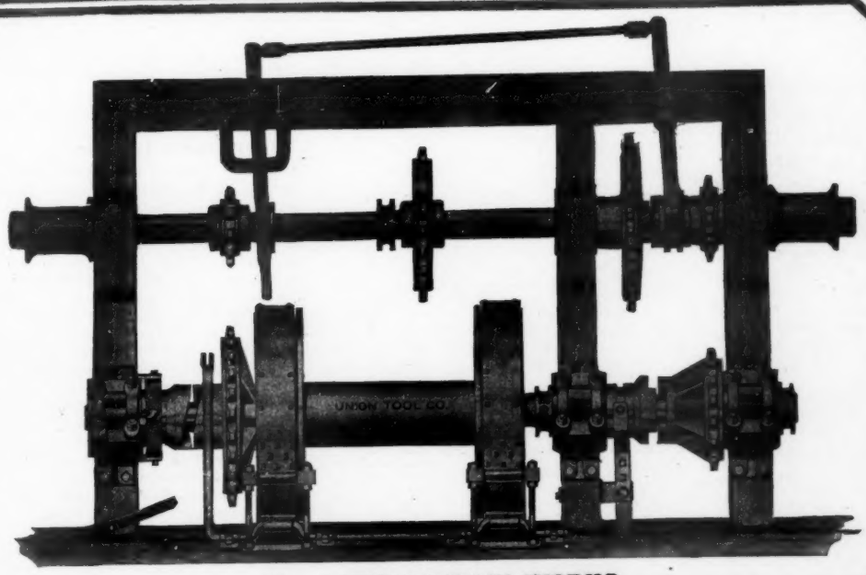


IDEAL TWIN CYLINDER DRILLING ENGINE



No. 5 IDEAL DRAW WORKS

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SUPPLY COMPANIES

NSCO

1923 WAS BIG YEAR IN CALIFORNIA HISTORY

(Continued from Page 98)

Production is declining quite rapidly and it is probable that these eastern shipments will be substantially reduced soon after the production and consumption lines have met. It is not expected, in view of existing conditions, however, that tanker shipments will be stopped over night as it is believed that the General Petroleum Co. will continue making shipments to the Atlantic Refining Co., while the Standard Oil Co. of California and the California Petroleum will undoubtedly continue to make deliveries to the Standard Oil Co. of New Jersey. The Pan-American Petroleum Co.'s docking facilities are rapidly nearing completion and, since this company has no means at present of disposing of its products in California, it is safe to assume that it will begin and continue to ship oil and refined products from the local harbor during the coming year.

There were 980 new wells finished during the past year with a total initial daily output of 1,376,299 bbls., 281 of which, with a total output of 684,741 bbls., were at Santa Fe Springs. There were 250 completed at Long Beach with an aggregate output of 455,978 bbls. and 120 brought in at Huntington Beach with a total output of 98,313 bbls. Torrance shows 102 new wells, while the combined fields of Maricopa and Midway show 140. New rigs erected during the year totaled 1,327, slightly less than the number put up last year. Long Beach is credited with 314, Torrance with 284 and Santa Fe Springs with 273. Long Beach, with 72, leads in the number of holes abandoned, followed by Santa Fe with 49 and Huntington Beach with 27. The largest number of new wells was finished during December, although the 134 completed during the month did not show the largest amount of new production. There were only 93 finished during September, but they accounted for 139,960 bbls. of new production, the largest for any month during the year. January, credited with 155 new rigs, and September, with 37 holes abandoned, lead all other months.

MORE DUSTERS MARKED 1923 WORK IN KANSAS

(Continued from Page 64)

shut down at the close of the year waiting on pipe line connections.

Earlier in the year, a Barton County wildcat caused a little excitement with a show of oil, but trouble was experienced with the hole and at the end of the year it was shut down at 3,520 feet. It was the Cheyenne Oil Co.'s No. 1 Sooy, SW cor. Section 27-18-12w. From sandy lime at 3,385-3,400 feet, it pumped 5 bbls. in 24 hours and the oil increased at 3,507 feet. Staking of new locations in this territory as the year closed assures that this area will be fully tested during the coming 12 months.

The next important discovery in chronological order was made by Waite Phillips and the Independent Oil & Gas Co. on the Johnson lease in Cowley County. The lime was topped at 3,198 feet and responded with a flow of 115 bbls. on November 18. It was later deepened to 3,209 feet and was good for 355 bbls. the first day. Since then, the well has held up remarkably around 300 bbls. natural daily. It is in the center of a 3,200-acre block.

About the same time, the Champlin Refining Co. found a sand containing 43 gravity oil at 3,538-62 feet in its No. 1 Hitchcock, NW cor. NE, Section 16-30-1w, in Sumner County. After a shot of 15 quarts, it swabbed 20 bbls., but the bailer was lost in the hole at that depth, and the rest of the year was spent in trying to fish it out.

Next on the list came Wilson & Martin's find in the old Wilmot gas pool in northern Cowley County. Their No. 1 Eastman, SW cor. Section 5-31-6, started spraying oil just at the close of the year, and came in for the first oil producer in that district, making 100 bbls. from sand at 2,850-52 feet. A gas sand at 2,840-50 feet had been producing 7,000,000 feet.

The last well to create a sensation was drilled in northwestern Greenwood County by Rodgers and others on the James Bratton lease. It started flowing at the rate of 60 bbls. an hour from sand at 2,120-73 feet and convinced operators that a new pool had been opened up. Location of this well is in the SW cor. NW NE, Section 14-24-9. It was the second well in the pool, the discovery well having been drilled by Bason and others on their Agard lease in the NW cor. SE, same section. The Bason well was still holding up around 400 bbls. daily at the close of the year.

In an Old Field

The deepest production ever uncovered in Montgomery and Labette counties was found during 1923 by the Red Bank Oil Co. in its discovery well, No. 1 Alloway, which was brought in in September for 100 bbls. Location of this well is in the NW of Section 17-35-17. Sand was topped at 1,216 feet. Three other producers were added to this pool before the close of the year and work was in progress on several more.

Other new territory opened up during the year included the Eureka district in Greenwood County. Late in April, J. A. Edwards struck a showing of oil in his No. 1 Parks, SW cor. SE, Section 11-24-10, and about the middle of May it drilled into the pay sand at 2,685-90 feet, making one of the largest wells of the year. It flowed 882 bbls. the first 24 hours, and tanked 3,000 bbls. in 4½ days.

Early in April, the Seeley Pool in Greenwood County, brought forth one of its largest producers in Vickers & Johnson's No. 5 Seeley, NE cor. SW SW, Section 5-23-11. It was good for 80 bbls. an hour at the start and tanked 1,200 bbls. the first day.

KANSAS

Summary of Wells Completed During the Year 1923

County—	Comp.	Prod.	Dry	Gas
Butler	234	7,287	122	3
Marion	34	1,280	21	1
Greenwood-Woodson	645	42,248	166	2
Chautauqua-Elk	73	1,463	32	16
Montgomery-Wilson	45	197	17	11
Neosho-Allen	42	552	12	1
Miami-Franklin-Anderson	82	2,316	34	5
Miscellaneous	250	6,029	133	22
Total	1,405	61,372	535	63
Total, 1922	1,640	74,391	497	86
Difference	235	13,019	38	23

Summary of Wells Completed by Months

County—	Comp.	Prod.	Dry	Gas
January	165	7,540	64	18
February	127	5,620	55	4
March	130	7,537	42	5
April	158	9,449	53	9
May	198	11,182	62	5
June	149	8,320	41	0
July	140	4,656	53	3
August	141	2,786	67	3
September	95	1,544	45	5
October	41	1,380	22	3
November	29	613	16	2
December	32	745	16	6
Total, 1923	1,405	61,372	535	63
Total, 1922	1,640	74,391	497	86
Total, 1921	1,380	96,789	353	118
Total, 1920	3,164	181,845	690	147
Total, 1919	3,446	172,449	638	177
Total, 1918	4,671	342,872	525	272
Total, 1917	3,469	325,410	559	174
Total, 1916	3,537	250,267	360	127
Total, 1915	1,088	10,258	135	341

FEWER COMPLETIONS IN OKLAHOMA IN 1923

(Continued from Page 64)

the same section was completed for 1,424 bbls. initially.

Newman's Vaseline Well

In January, W. C. Newman completed his famous "vaseline" well in Section 31-8-12. It started out at the rate of 140 bbls. daily and was one of the queerest freaks of the year.

In July, the Papoose Oil Co. opened up some new territory one township west of the Wetumka Pool with its well in Section 4-9-9, which made 400 bbls., and the Gilcrease Oil Co.'s No. 1 Bruner, in Section 20-9-9, was good for 115 bbls. These will probably both be drilled deeper. The sand in the Gilcrease well was just scratched at 3,050 feet. Numerous rigs were up around both of these discoveries as the year ended and there are many indications that this area will be thoroughly drilled during the coming year.

A wildcat in Pawnee County that attracted considerable attention was drilled by the Duquesne Oil Co. in Section 8-21-6. After flowing 530 bbls. daily from sand at 2,785 feet, it suddenly stopped flowing and the hole filled up with water. It was drilled to 3,170 feet when the rig burned down.

In November, an Okfuskee County area received some attention due to Basset & Storm's No. 1 Dyer, in Section 12-13-7, which averaged 100 bbls. daily for a time, and at the end of the year was still good for 50 bbls.

Stroud's Promising Pool

One of the most promising districts uncovered during the year was near Stroud, in Lincoln County, where the Union Petroleum & Supply Co. found a sand at 4,076 feet that produced 450 bbls. of oil in its well in Section 2-14-6. This well was brought in after numerous difficulties and in December was still holding up around 400 bbls. daily. On Christmas Day, the J. A. Hull Oil Co. brought in a diagonal offset to this producer which tanked 1,965 bbls. the first 24 hours. As the year ended, other rigs were going up in the vicinity and supply houses were seeking locations in Stroud, indicating that the area is expected to get a big play during 1923.

One of the biggest surprises of the year came in the old Robberson Field in Garvin County, where early in January a well was brought in that was thought for some time to be a freak. It was Nelson Bros.' No. 6 in Section 14-1n-3w, and made 10,000 bbls. a day at first, about five times the initial production of any well in that area. The second week, it was producing around 6,000 bbls. In April another gusher was added to the field by the Humble Oil & Refining Co., its No. 5 Powell, in the same section, starting at 3,000 bbls. the first 24 hours and increasing steadily to 8,000 bbls. The Humble's No. 6 Powell produced 4,600 bbls. the first 21 hours.

A Wonderful Producer

The biggest single day's production ever gauged in an Oklahoma well came late in May when the Carter Oil Co.'s No. 33 Noble, in Section 21-4s-2w, in the Hewitt Field, Carter County, found a deep sand at 2,940 feet and, by actual gauge, the well flowed 14,460 bbls. in 24 hours. Two weeks later, it was still good for 9,000 bbls. daily, and in its brief lifetime it tanked more than 300,000 bbls. Water broke in and cut the oil so badly that the well was plugged and abandoned. Trouble with the hole had almost caused its abandonment just before the gusher pay was reached. Another gusher horizon was found at still greater depth in this field early in June by the Baker & Strawn's No. 1-A Dillard, in Section 22-4s-2w, which made 1,100 bbls. from the 3,510-foot level.

In northwestern Seminole County, a pool opener was contributed by J. I. Cromwell in his No. 1 Bruner, in Section 15-10-8. It was completed in December for 380 bbls. in sand at 3,480-94 feet.

The discovery of the North Fox area was the only other new territory of interest opened in Carter County. It was made by the Humble Oil & Refining Co.'s No. 1 Jennings, in Section 28-1s-3w, which found three deep pay sands estimated good for 100 bbls. The well has not been completed, having run into water and was being plugged back to the productive sands.

In Western Oklahoma

Beckham County hopes were high at the beginning of the year and in April a wildcat drilled by Martin and others in Section 31-9-23w, south of Sayre, swabbed 450 bbls. In July, the Carter Oil Co.'s No. 1 Gray, in Section 15-9-23w, started out at 135 bbls. an hour and gauged 1,460 bbls. in 11 hours before it was shut in. When it was opened up later, it made 60 bbls. an hour, about 25 per cent of which was sediment. In August, the Carter's No. 1 Windle, in Section 31-9-23w, was good for 1,710 bbls. the first day, and the Empire Gas & Fuel Co.'s offset produced 400 bbls. in 12 hours and then quit flowing. As the year progressed, the Sayre district grew more and more disappointing.

Some of the older sections of the State look good for renewed activity as a result of some successful operations. Osage, Tulsa, Washington and Creek Counties appear to have possibilities for Wilcox sand production that have been overlooked since the Munn Bros. & Glidden developed the Tulsa Country Club Pool, in Section 28-20-13, Osage County, along with the Riverland Oil Corp. Three wells were brought in by the Munn Bros. during the year, two of which started at 100 bbls. an hour. All were good wells, and the seven producers in the pool were making about 3,000 bbls. daily. F. A. Gillespie brought in a 3,000-bbl. well in Section 8-20-12, within 5 miles of Tulsa.

Two of the largest wells ever completed in Tulsa or Okmulgee Counties were drilled by the Oklahoma Eastern Oil Co., in Section 24-16-12. The company's No. 6 Tiger was finished in December, producing 200 bbls. an hour from the Wilcox sand. No. 5 Tiger, in the same section, started in August at 120 bbls. an hour from the same sand.

Immense Gassers

Two of Oklahoma's largest gassers came in during the year. One of these, belonging to the Magnolia Petroleum Co., blew in July 4 and was estimated at 100,000,000 feet although it was never controlled, having finally exhausted itself and was plugged. It was in Section 24-2s-3w, Carter County. The Pure Oil Co.'s No. 1 Washington, in Section 31-17-8, was good for 75,000,000 feet. Grady County fields continued to produce large gas wells throughout the year.

There were some large producers in the Hominy district of Osage County, chief among these being the Marland Oil Co.'s No. 2 in Section 14-22-8, which in April flowed 2,500 bbls., pinched in, and was estimated good for 5,000 bbls. if opened up.

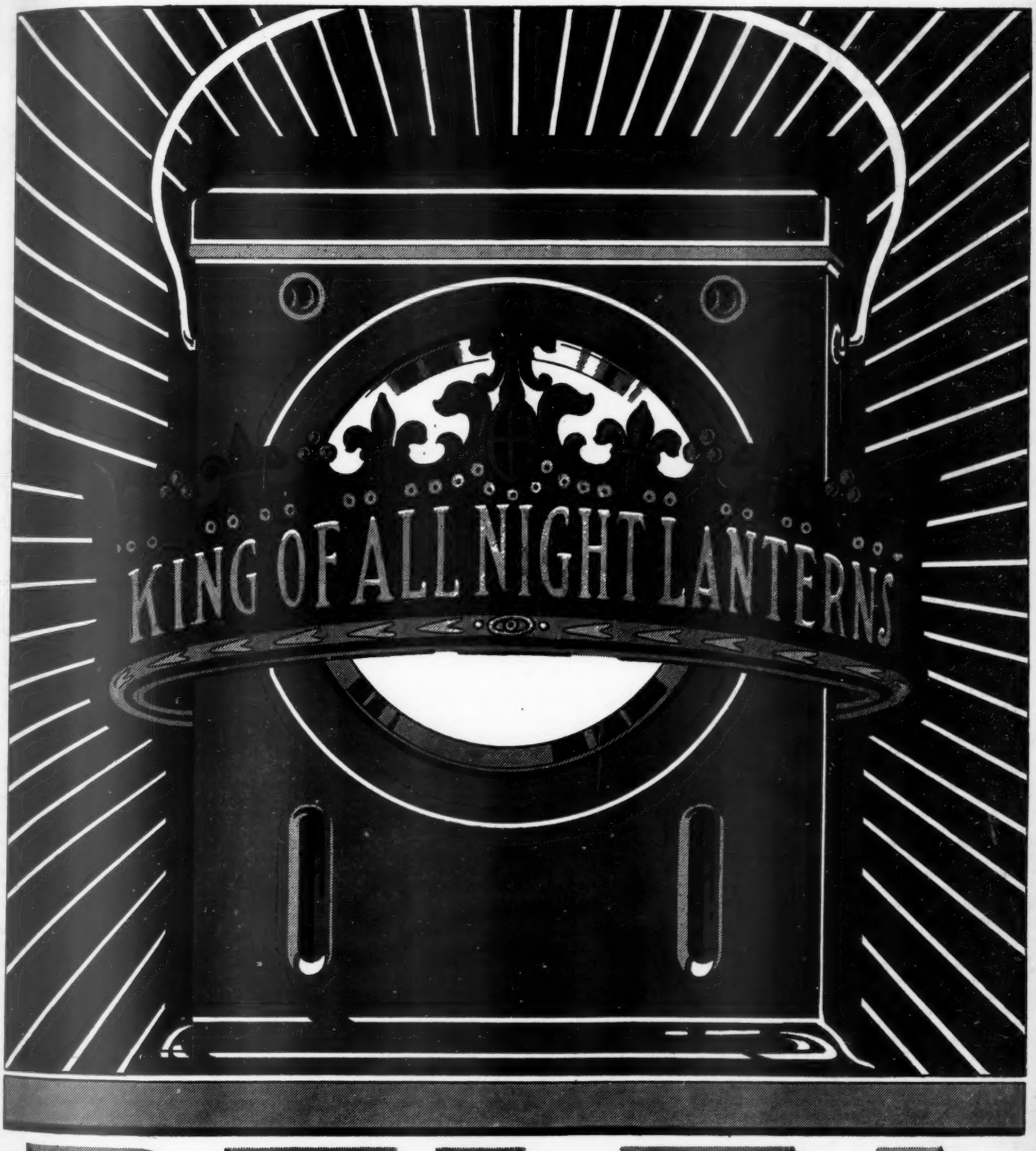
OKLAHOMA

Summary of Wells Completed During the Year 1923

County—	Comp.	Prod.	Dry	Gas
Washington	56	285	23	3
Nowata-Rogers	89	1,020	98	9
Osage	961	295,143	179	60
Tulsa	252	6,628	184	29
Okmulgee	562	29,123	206	67
Okfuskee, Hughes, Seminole, McIntosh	468	52,580	219	68
Muskogee-Wagoner	179	2,460	98	19
Creek	945	186,[illegible]18	[illegible]	[illegible]
Payne	87	1,600	36	10
Pawnee	190	7,515	55	18
Garfield-Noble	437	201,700	88	6
Kay	507	391,337	69	37
Carter	380	86,[illegible]	[illegible]	[illegible]
Stephens-Cotton	358	8,210	122	53
Miscellaneous	392	37,790	168	89
Total	5,833	1,277,936	1,731	587
Total, 1923	6,148	1,190,165	1,428	571
Difference	315	87,771	303	16

Summary of Wells Completed, by Months

Month—	Comp.	Prod.	Dry	Gas
January	489	87,926	151	77
February	421	108,981	119	53
March	497	117,945	160	54
April	640	151,449	181	64
May	754	215,665	197	52
June	658	179,836	168	61
July	561	147,102	142	45
August	563	83,521	199	45
September	420	68,201	151	45
October	304	36,626	79	25
November	330	52,900	89	30
December	277	27,795	95	35
Total, 1923	5,833	1,277,936	1,731	587
Total, 1922	6,148	1,190,165	1,428	571
Total, 1921	5,715	589,298	2,026	788
Total, 1920	9,097	773,900	2,267	718
Total, 1919	8,171	488,762	2,160	753
Total, 1918	8,367	572,306	1,391	597
Total, 1917	6,676	561,462	1,136	389
Total, 1916	7,700	518,888	946	350
Total, 1915	4,603	1,034,700	1,234	529
Total, 1914	8,297	973,550	1,317	580
Total, 1913	9,131	327,503	890	446
Total, 1912	5,982	213,317	615	364
Total, 1911	4,445	173,138	547	301
Total, 1910	4,370	179,973		



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MEN KNOWN IN OILDOM

Herbert L. Pratt

Probably no name has been more intimately linked with the petroleum industry in the United States from its inception than that of Pratt, for when crude oil was first discovered in this country on a large scale, Charles Pratt established an oil converting plant on the East River in New York. The crude was shipped to him in barrels, and "Pratt's Astral Oil" became familiar throughout the country. Later, his organization was linked with that of John D. Rockefeller in what was to become the Standard Oil Company.

Herbert L. Pratt, now president of the Standard Oil Company of New York, was born in Brooklyn on November 21, 1871. He was educated in the public schools of Brooklyn and later attended Amherst College, from which he was graduated. His first business experience was gained as a clerk in the Bergen Point Chemical Works, and he next became assistant to the manager of the Standard Oil Company Pratt Works, and the Queens County Works. In a short time he was advanced to the position of manager of these two plants, a post which he occupied for several years. Further advancement soon called him to the headquarters of the Standard Oil at No. 26 Broadway, where he has maintained his offices ever since.

During the war, Mr. Pratt left his executive duties in order to help reorganize the canteen service, in the accomplishment of which he rendered a notable service.

In addition to his connection with the Standard Oil Company of New York, Mr. Pratt is a director of Frederick Loeser & Company, Inc., the largest department store in Brooklyn, and is a member of the firm of Charles Pratt & Company. He is also a trustee of the Bankers' Trust Company and of the Pratt Institute, one of the principal educational institutions of New York, founded by his father.

He is a life member of the Empire State Society of the Sons of the American Revolution.

PERSONAL PARAGRAPHS

H. A. Meyer, assistant to the vice president and general manager of the Prairie Oil & Gas Company, visited in Tulsa a couple of days last week.

* * *

L. R. McCollum, manager of the London office of the National Supply Company, is spending some time at the Toledo, Ohio, headquarters. He reached New York a week or so ago on the White Star liner Majestic from Southampton.

J. H. McDermott, well known oil and gas operator, of Morgantown, W. Va., spent a few days in Pittsburgh, Pa., last week.

* * *

E. E. Simpson, general manager of the Oklahoma Eastern Oil Company, left Tulsa last week for an extended trip through California.

* * *

E. R. Perry, vice president and general manager of Cosden & Company, Tulsa, was in Chicago on business last week.

* * *

J. P. Graver, president of the Graver Corporation, made a short business trip to Milwaukee, Wis., in the interests of his concern recently.

* * *

C. C. Calvert, sales manager for the Rock Island Refining Company at Duncan, Okla., returned to his home after spending a week in Tulsa on business.

* * *

W. C. Morgan, Mid-Continent manager of the Hughes Tool Company, and L. H. Wellensiek, field engineer of the company, have left Tulsa for a tour through several Oklahoma fields.

* * *

A. W. Mitchell, prominent attorney of Erie, Pa., formerly of Bradford, was a Pittsburgh visitor last week. Attorney Mitchell enjoys a large acquaintance among the oil fraternity.

* * *

F. A. McMurray, oil country representative of the M. B. Skinner Company, Chicago, has returned to Tulsa after spending some time at the home office of the company. His headquarters in Tulsa are at the Hotel Corona.

* * *

Col. R. W. Stewart, chairman, and other members of the board of directors of the Standard Oil Company of Indiana, who had been on a tour of inspection of the company's interests in the Mid-Continent, returned to the Chicago office last Saturday.

* * *

W. H. Bilby, of the B. & L. Oil Company, Fairbury, Neb., Dean Richardson, of the Richardson Lubricating Co., Quincy, Ill., and E. E. Smith, of the Smith Oil & Refining Co., Rockford, Ill., attended the recent meeting of the American Oil Men's Association in Chicago.

* * *

Stephen H. Brooks, president of the Oil Conservation Engineering Company, of Cleveland, Ohio, was in Tulsa last week on his way back to headquarters after an extended trip through the Southwest. His route covered the principal cities of Louisiana, Texas and Oklahoma, and he was returning by way of Kansas City and Chicago.

* * *

J. H. Finn, with the production department of The Texas Company at Fort Worth, Tex., received a telegram last Friday that his father-in-law, Daniel Roach, of Terre Haunte, Ind., had suddenly died. Mr. Roach was employed for many years with the Buckeye Pipe Line Company in the Ohio fields. Mr. Finn left Saturday to attend the funeral, which was held at Findlay, Ohio, the former home of Mr. Roach.

* * *

W. B. Corlett, of Wichita Falls, Tex., connected with the land department of The Texas Company for the past 15 years, and for six years as manager of the land and lease department for that company in the North Texas district, has severed his connection with the company and after the first of February will enter the ranks of the independent operators. Mr. Corlett is known personally by nearly every operator in north Texas and ranks high as a land lease man in the estimation of those connected with that branch of the industry.

* * *

Bart Meyers, general manager for the Carter Oil Company, in the Salt Creek Field, passed through Casper, Wyo., last week on his way to the west coast. Mr. Meyers will make his first stop in Oregon, going on down the coast to California, spending in all two or three months in the Sunshine State. It is with regret that Mr. Meyers' many friends learn of his poor state of health, which has made advisable the journey to a milder climate, and all trust the vacation will benefit him greatly, and hope for his early return.

Hiram C. Wilson, Depew, Okla., producer, was visiting friends in Chicago for a few days last week.

* * *

Milford Reed, of Sapulpa, Okla., has gone to Buenos Aires on a three-year contract with the Carter Oil Company.

* * *

W. H. Price, of Black, Sivalls & Bryson, Inc., has returned to Casper, Wyo., from a trip through Ohio and other eastern points.

* * *

Judge F. W. Freeman, general manager in the Rocky Mountain region for The Texas Company, with headquarters in Denver, Colo., made a short business trip to Casper, Wyo., early last week.

* * *

G. W. Harris, geologist, of Harrison, Neb., who has been specializing in the geology of eastern Wyoming and western Nebraska for a number of years, spent a few days in Casper, Wyo., recently.

* * *

Oscar M. Miller, personnel director at the Bayway refinery of the Standard Oil Company of New Jersey, has resigned and will become secretary of the Foundation Press of Cleveland, Ohio.

* * *

Frances M. Buente, formerly editor of Tide Water Topics, the house organ of the Tide Water Oil Company, has resigned and will go into business for herself in New York City.

* * *

T. L. Moriarity, traffic manager for the Continental Supply Company, with headquarters in St. Louis, spent a few days in the Tulsa office of the concern last week.

* * *

W. N. Grafius, of the Cincinnati Rubber and Manufacturing Company, who makes his headquarters, in Houston, Tex., was making a tour of the Mid-Continent territory during the past week in the interests of his firm.

* * *

J. W. Anderson, sales agent of the Sheffield Steel Mills and the Kansas City Bolt & Nut Company, of Kansas City, Mo., is making a tour of the oil fields in the Mid-Continent territory studying conditions with a view of determining the needs for 1924.

* * *

J. L. Hickle, formerly of Kiefer, Okla., has returned to this country from a four-year stay in Burmah, where he was stationed as a gas conservation officer in the employ of the Burmah Oil Company, Ltd.

* * *

E. P. Campbell, oil and gas supervisor of the United States Bureau of Mines, and B. H. Carnahan, chief gauger for the bureau, have been visiting the Casper and Salt Creek offices of the bureau recently.

* * *

A. V. Bourque, secretary of the Association of Natural Gasoline Manufacturers, with offices in Tulsa, attended the first annual meeting of the south central division of the United States Chamber of Commerce, which was held in New Orleans, January 24 and 25.

* * *

A. L. Meeks, manager of the Mid-Continent offices of the S. M. Jones Company, of Toledo, Ohio, has returned to Tulsa after a trip through Kansas with W. E. McPherson, representative in Kansas for the company, who makes his headquarters in Eureka, Kas. Mr. Meeks reports business especially good in this territory.

* * *

Glenn B. Morgan, former State geologist of Wyoming, was in Casper recently and attended the meeting of the Wyoming Petroleum Club. Mr. Morgan's friends were glad to learn that he is recovering from the effects of his recent serious operation. He is widely and favorably known and will open an office as consulting geologist in the spring.

* * *

The Texas operating headquarters of the Tidal Oil Company are being moved from Dallas to Fort Worth, office rooms having been secured on the twentieth floor of the W. T. Waggoner Building. The change will transfer J. H. Jenkins, James R. Gan, attorney for the company, and Frank Schneider, in charge of the production department to Fort Worth.

Announcing

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Hazard Wire Lines

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Linking up one of the oldest oil well supply houses with America's pioneer Wire Rope manufacturer.

For several generations the name BOVAIRD in connection with oil and gas well supplies has been synonymous with Quality and Service.

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EQUIPMENT AND SUPPLIES

Profit to Producers In Conserving Gases Says Tank Engineer

Charles P. Buck, of Topeka, Kans., petroleum engineer, told the Okmulgee District Oil & Gas Association that by the use of vapor-proof steel tanks they can reap an additional profit of 13.8 per cent at a very little outlay of cost.

He said tests made in Kansas, Texas, and Oklahoma, in all kinds of weather, furnished conclusive proof that by conserving the gases in the tank the gravity of the oil can be raised approximately 4.6 per cent and the saving effected will run 13.8 per cent when the evaporation is stopped.

Right now, he said, there is a world turmoil over crude oil. The future commercial supremacy of any nation is going to depend upon its resources, which leads to world necessity, and crude petroleum is a factor in industrial power. Much of this power is furnished by oil.

The extent to which evaporation has prevailed has only recently been found. He told of tests made in the three large producing States that proved beyond a doubt the savings entailed by the stopping of evaporation, or rather the turning of the evaporated gas back into oil in the tanks.

Conservation of vapor in the tanks, he said, is not sufficient, as the tanks must have enough pressure to condense the vapors back into the fluid.

He laid stress on the keeping of the tank equipment in order. The valves, he said, should be looked after and fixed, if necessary. If the producer can add from 5 to 13 per cent to his production, it is just like buying that much more production.

In a well that has a certain amount of oil and a certain amount of gas, the old method was to carry the gas off in a gas trap. Now the gas trap can be done away with. You can take a former wasteful product and by means of a low pressure burner, utilize it for the operation of the lease.

The speaker said it is doubtful if the producer recovered more than 12½ per cent of the oil from the sand in that field. How to get a greater recovery, Mr. Buck could not tell, but he said the time would come when the recovery would be much greater. He said a vacuum did not answer the purpose, for the more you increase the vacuum, the more rapidly the oil is sealed off. He predicted the time would soon come when the vacuum would be done away with entirely, and the producer will receive a greater amount of oil.

With the vapor-proof tank he said it was possible for any producer, no matter in what circumstances, to increase his profits at a very little expense.

The 13.8 per cent increase, which is now an additional profit to the producer, is a loss to the pipe line company. The pipe line company buys the oil in the tank and after it goes into the line, there is a decided loss of gravity and loss by evaporation. The pipe line is absorbing a great loss on high grade oil. Engineers are now trying to determine just what the loss is, and if it should reach as much as 6 per cent they will be unable to stand it.

It was suggested by J. J. Moroney that they might make a deduction of 9 instead of the customary 3 per cent.

The question of whether the cost of replacing bottoms of steel tanks that rust out, would not overcome the profit, as compared with a wooden tank, was put by T. T. Blakely.

The speaker answered that in all instances steel tanks do not corrode and rust on the inside, but this condition is on the outside, and steel tank builders are now covering the bottom of their tanks with an asphalt substance that will do away with the rusting of tank bottoms.

ADOPT TANK FITTINGS IN STANDARDIZATION

A step in the direction of standardization on equipment for oil storage tanks approved by the Underwriters Laboratories, was taken in the recept adoption of Oceco approved tank fittings for use on all tanks manufactured by the Petroleum Iron Works Co., Sharon, Pa.

This means that every purchaser of P. I. W. tanks in the future will obtain the lowest insurance rates covering such structures, as well as the elimination of a large percentage of evaporation losses experienced heretofore, according to Stephen H. Brooks, president of the Oil Conservation Engineering Co., manufacturers of the Oceco fittings. Tanks of this construction and with this equipment are reported absolutely fireproof, and a lifetime guarantee is placed on the Oceco fittings. No tank so equipped has ever been known to burn, Mr. Brooks states.

OPENS LOS ANGELES BRANCH

C. P. Messinger, vice president, and Brint Welser, assistant secretary, of the Chain Belt Co. have returned to Milwaukee after completing the details of the opening of a factory branch in Los Angles, at 210 South San Pedro Street. Complete stocks will be carried at all times in order to make better deliveries. The branch will not affect the status of the supply dealers, and is merely being opened in the interests of better service. J. V. McDonald, who has represented the organization in California for some time, will be in charge of the new branch.

FINDS BUSINESS GOOD

A new store has just been opened up in Shreveport, La., by the Frick-Reid Supply Co., with E. W. Sullivan, formerly located at Haynesville, La., in charge. Owen Thomas is to have charge of the machinery and general sales, and J. C. Davis, Jr., will handle the storeroom.

Business in all branches of the supply business is excellent in Louisiana and Texas, according to J. L. Shakley, sales manager of the concern, who recently returned to the Tulsa office from an extended trip through those States.

NOTE SHARP INCREASE IN DEMAND FOR OIL COUNTRY TUBULAR GOODS

By B. E. V. Luty

PITTSBURGH, Pa., Jan. 28.—There has been rather a sharp increase in demand for practically all oil country tubular goods with the exception of line pipe. Consumption has increased little if at all, and could not be expected to increase at this time, but the jobbers in all the fields are preparing for a very active season. They are placing orders with increasing freedom from week to week and are taking deliveries well.

Among the pipe mills predictions are made that 1924 will witness heavier consumption of tubular goods in drilling of new wells and extension of old wells than any previous year. To an extent they base the prediction on the statistical position of oil, as to production, stocks and consumption, and the frequent advances in oil prices, but to a greater extent the judgment is based upon orders received for tubular goods and on reports as to drilling operations being planned.

The National Tube Co. is operating all its lap weld furnaces with the exception of one, which is located at a plant where the steel supply at the moment is such that either one lap weld or one butt weld furnace must be idle. Butt weld furnaces are naturally operating as demand for merchant pipe has kept up right through the winter. The pipe mills in general are operating at close to normal capacity. They are not crowded to get out tonnage, but they are probably running at a higher percentage of capacity than finishing mills making any other steel product, with the exception of the tin plate mills.

Production Higher

The steel industry in general is giving a good account of itself. Production of steel has more than recovered the 5 per cent loss there was from November to December. In other words, steel production is at a higher rate than in November, and the eight months' decline in prouction is now followed by rising production.

At the same time there is seen in some quarters a little feeling of disappointment that the steel market is not broadening out more rapidly than it is. Last month the expectation was that 1924 would prove to be a good year in steel, though possibly not altogether as good as 1923. January is rarely a month for any great improvement, March being a more likely month.

In some finished steel products there is more buying than in December. In others there is not as much, but they are lines in which a very good business was done in December. There is little disposition anywhere to buy far ahead, for the simple reason that no one expects prices to advance and there is no difficulty, thus far at least, in securing prompt shipment on new orders. Some buyers seem to be taking hold a little more freely than they otherwise would on account of the practical certainty that there will be a suspension April 1 at the union bituminous coal mines, but this does not seem to be much of a factor. Rather, jobbers are building up stocks for the regular spring distribution, in sheets, merchant bars, pipe, wire products and other lines.

Tubular Prices Held

On all tubular goods prices are very firmly held and there seems to be no question about their holding indefinitely. Prices on other finished steel products are holding, but in some cases there is no particular assurance that they will hold. In bars, shapes and plates there have been concessions for weeks past on large and particularly attractive orders, and while the shading has been done very quietly it may eventually have some influence on open market prices. In sheets the number of price cutters decreased sharply in December, but there are one or two new cutters now.

Tin plate mills are running very well, and a trifle better than a fortnight ago. They are making very heavy shipments to the oil trade.

No demand is reported for oil storage tanks.

BESSEMER GETS RIGHTS ON ATLAS FULL DIESEL

Exclusive rights for the manufacturer of the Atlas full Diesel oil engine for all markets of the world except the Pacific Coast have been secured by the Bessemer Gas Engine Co., and the decision of this large concern to specialize on the Atlas type of engine indicates its attitude toward the future of the oil engine business.

The Atlas engine was developed and built under the supervision of Mr. Warenskjold, president of the Atlas firm, who is considered one of the ablest engineers on the Pacific Coast. About 50,000 h. p. of Atlas Imperials are now in use, and orders already on hand at the Grove City, Pa., plant of the Bessemer firm amount to more than 3,000 h. p. Deliveries are expected to begin about March 1 from this factory, due to the rapid progress that has been made there on the new additions and on the installation of equipment. This plant now gives employment to about 1,000 men. It has an immense up-to-date foundry, and the testing department is large enough for the assembly of 25 engines at one time. The Atlas engines will be built in sizes covering three-cylinder, four-cylinder and six-cylinder sets, ranging from 50 h. p. up to 1,000 h. p. for marine, stationary and other work.

The Bessemer Gas Engine Co. has served more than 30,000 customers, the largest one alone having ordered about 2,000 engines.

ARRANGE DISTRIBUTION FOR SPECIALTY LINE

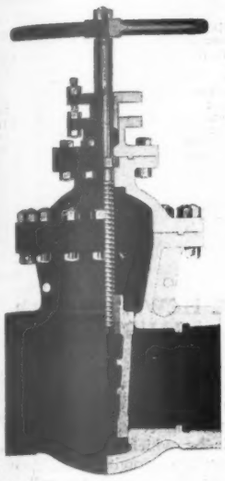
The line of specialties for gasoline plants and refineries manufactured by the Morrison Bros., of Dubuque, Iowa, including swing joints, locking gate valves, pressure vents, rotary pumps for handling gasoline and kerosene, and various tank wagon and filling station specialties, will be distributed by the National Supply Co., according to arrangements recently completed. This line is well known in the Mid-Continent and in the future purchasers of this equipment can obtain their supplies through the various National stores, instead of orderind direct from the factory.

The patented swing joint in which no metal touches metal is one of the best known articles manufactured by Morrison Bros., and the locking gate valve, which has a patented feature enabling it to be locked either open or closed is also familiar to the trade. A patent has been applied for on a line valve with the same feature.

OUTBOARD BEARING FOR STEAM ENGINES

The increased severity of drilling conditions, due to increased depth of wells and the necessity for handling heavier strings of tools, has resulted in the addition of an outboard bearing to the steam engines manufactured by the Oil Well Supply Co. This outboard bearing is carried by an arm rigidly attached to the bed, and the arm is of such design and strength as to always hold the outboard bearing in line with the two main bearings, thereby distributing an equal pressure to each of the three bearings. The construction of the bearing is such that a belt, already clamped together, can be put on the engine pulley without removing any part of the bearing. A special longer crankshaft is necessary to replace the regular crankshaft when the outboard bearing is used.

WHAT IS KEROTEST ?



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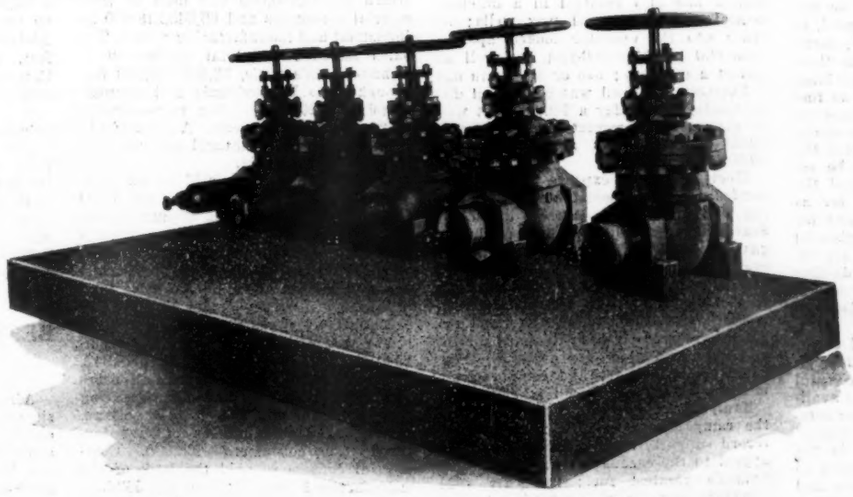

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NATURAL GAS DEVELOPMENTS

OPERATOR DOING UTMOST TO SAVE GAS SO SERVICE TO PUBLIC MAY CONTINUE

By John B. Corrin
Vice President, Hope Natural Gas Co.

During the past few years much has been said and written urging upon the consumer the necessity of avoiding waste of natural gas, and calling his attention unceasingly to the prime importance of saving this precious fuel by the use of improved and more efficient appliances. The consumer, as he strives to "use but not waste gas," may naturally ask: "What has the operator done during the same period of time to accomplish these much desired objectives?"

The operator's motto has not been: "Don't do as I do but do as I say;" instead he has labored earnestly to avoid wasting natural gas and can point with satisfaction to his gas saving record; withal he continues his efforts toward greater success. At no time during the history of gas operations have the producers of natural gas expended so much money, care and thought toward procuring and saving gas as during the past two or three years. Not only has this been necessary because of the dwindling supply of gas in both the old wells and new wells, and the fact that the old established fields have been explored to the limit, but also by reason of increasing number of consumers in communities served, due to the natural growth in population.

Effort to Supply Public

Only by using extraordinary care and effort in saving gas in the field have the gas companies been able to meet the demands of their patrons. It has become an almost inexcusable offense for an employe to permit a leak, however small, to exist after it has been discovered; many companies are using coal for fuel in their gas compressor stations and thus large quantities of gas heretofore used as fuel have been released for the use of patrons; gas compressor stations have been equipped with low stage compressors that the maximum amount of gas might be secured from low pressure wells and the life of these wells prolonged as far as possible; gas used by the companies for fuel in their operations is being registered by meter; extensive experiments are being made with gas engines for drilling purposes with consequent saving of approximately 35,000 feet of gas daily in each case.

One of the most important and eventful features of this gas saving campaign by the operators has been the successful appeal to the oil operators to make available for delivery and sale to the gas companies their "casinghead" and "waste" gas, the price now paid for gas in the field in many localities being sufficient to justify the oil operator in collecting and saving his gas for sale and also enabling him to install more efficient appliances and methods in the use of gas for his operations. That this is a profitable undertaking is evidenced by the fact that one large oil operator received approximately $500,000 for gas sold during 1923 not a small item, considering the prevailing low prices for crude oil.

Stop Waste in Operations

Most gas companies are constantly installing clamps to stop small leaks on their lines; low pressure and small volume wells are nursed along now instead of being abandoned as "not worth bothering with;" most free gas consumers are limited in the amount of gas they may use each year free of charge; continuous inspection of lines, well and appliances is made for leaks; blowing of wells for removal of moisture has generally been discontinued; in quite a number of instances gas heretofore used in manufacture of carbon black has been purchased and the factories discontinued.

As gas fields become older and the wells decrease in volume and pressure, they require additional care and attention. This

John B. Corrin

decline has also resulted in a different mental attitude toward new wells; 15 years ago the operator looked upon a 3,000,000 or 4,000,000-foot gas well as almost a calamity; five or six years ago a 1,000,000-foot well was considered disappointing, but today a 100,000-foot well is viewed with respect and welcomed, while few operators abandon even a 50,000-foot well.

Much effort and expense has been expended during the past few years in drilling test wells to an extreme depth endeavoring to discover a deep producing gas sand. More thought and effort than ever before has been given to new methods of securing the last obtainable 1,000 feet of gas from wells and, as a result, one or more small compressors and engines have recently been designed for individual or small groups of wells; these machines being light and comparatively inexpensive, should fill a long felt want.

Truly, the operator has been a leader in the campaign to save gas; an enviable record supports their endorsement of the appeal to the consumer to avoid wasting nature's greatest fuel; the year 1924 therefore should witness a combined effort by operator and consumer to "use but not waste" and bring about a great saving of natural gas.

FORT SMITH, ARK., GAS DEAL

FORT SMITH, Ark., Jan. 28.—The Fort Smith Light & Traction Co. at Fort Smith, Ark., has contracted with the Twin City Gas Co. to market the latter's gas in Fort Smith, Van Buren, Alma and other points in the Fort Smith district, according to announcement of Robert Coffey, manager of the Fort Smith company. The Twin City company will continue to supply gas to the Fort Smith company and to industrial users direct in Fort Smith and Van Buren. The Fort Smith company has been supplying gas to domestic users in that city for about two years.

Natural Gas Output In Pennsylvania Was Fifth More in 1922

HARRISBURG, Pa., Jan. 26.—Pennsylvania's 21 natural gas counties produced 99,711,890,000 feet of gas in 1922, or 20 per cent more than in 1921, according to the Bureau of Statistics and Information of the Pennsylvania Department of Internal Affairs. The production came from 12,924 wells.

Natural gas companies in the State held leases in 1922 on 2,017,910 acres and on these tracts 512 producing wells were brought in in 1922. In addition there were 108 non-producing wells drilled.

The natural gas industry in Pennsylvania represented an invested capital in 1922 of $132,216,205, or 2 per cent above the capitalization in 1921. The companies employed 5,725 persons who were paid $7,669,797.

Sales of natural gas in 1922 amounted to $52,645,357, or 27.9 per cent above 1921. The biggest increase was in the use of natural gas in industrial and manufacturing plants where sales amounted to $20,277,453, or 62 per cent above the preceding year. Commercial sales amounted to $26,986,325, an increase of 11 per cent, while other sales amounted to $5,381,519. There were 526,047 commercial consumers in 1922, 2,411 industrial and manufacturing consumers and 2,938 other users, making a total of 531,396 consumers.

The quantity of natural gas sold in 1922 reached 134,214,860,000 feet, of which 53,653,460,000 was used by commercial consumers and 65,046,218,000 by industrial and manufacturing plants. The sales included the total production of Pennsylvania's wells, 32,805,265,000 feet brought into Pennsylvania and approximately 45,000,000,000 feet represented a by-product of coke ovens. A total of 11,005,633,000 feet of natural gas was sold outside Pennsylvania.

Commercial gas was sold on an average of slightly over 50 cents per 1,000 feet, while industrial and manufacturing concerns paid a little more than 31 cents per 1,000 feet. For public uses the cost was 44¼ cents per 1,000 feet, the average cost amounting to a little more than 39 cents.

Manufactured gas produced in all eastern counties in 1922, totaled 24,233,794,000 feet and sold for $27,945,942. There were 635,161 commercial users and 27,779 industrial and manufacturing consumers in addition to 159 others, making the total number of manufactured gas consumers 663,000. Commercial consumers paid the bulk of the manufactured gas bill or $21,563,332. The average cost of manufactured gas during the year was $1.16 per 1,000 feet, the commercial price being $1.14, the industrial $1.27, while other classes of consumers had to pay as high as $1.45 per 1,000 feet.

As the figures show, Pennsylvanians consumed 158,448,654,000 feet of gas of all kinds in 1922 and their gas bill for the year was $80,591,299, or 17 per cent more than in 1921, the sales in feet increasing 19 per cent.

The production in natural gas in Pennsylvania's natural gas producing counties, the number of productive wells brought in in each and the number of new producing wells brought in in 1922, are shown in the following table:

County—	Cu. ft. of Production	No. Prod. Wells	Wells Dril'd in '22
Allegheny	8,357,473,000	610	14
Armstrong	13,340,879,000	1,699	86
Beaver	290,779,000	136	4
Butler	2,050,540,000	478	7
Cambria	8,000,000	3	...
Clarion	8,507,097,000	1,897	55
Elk	6,718,445,000	962	36
Erie	10,070,000	71	...
Fayette	2,595,952,000	107	5
Forest	227,322,000	199	1
Greene	16,676,846,000	1,149	84
Indiana	754,146,000	112	16
Jefferson	9,082,710,000	537	69
Lawrence	25,635,000	26	...
McKean	5,253,482,000	1,366	23
Mercer	473,705,000	67	3
Potter	2,330,769,000	532	19
Venango	3,445,997,000	574	14
Warren	898,254,000	127	...
Washington	10,453,685,000	762	53
Westmorland	8,210,086,000	753	19
Total	99,711,890,000	12,924	511

BIG HEWITT GASSER GAUGES 26,000,000 FEET

ARDMORE, Okla., Jan. 26.—The Wolverine Oil Co.'s No. 111 on the Dillard farm, in the northwest of the northwest of the southwest quarter of Section 22-4s-2w, which blew in as a gasser with production gauging 26,270,000 feet, is one of the largest gas wells yet found in the Hewitt Field.

The Baker-Strawn interests brought in a 27,000,000-foot gasser about a year ago in their No. 6-A on the Dillard farm, in the northwest of the northeast of the northwest quarter of Section 22-4s-2w, about five-eights of a mile northeast of the Wolverine-Dollard No. 11, but at a shallower depth, the sand being at 2,184 feet. This well is now making oil from the 1,700-foot horizon.

The Cottonbelt Oil Co. secured a 15,000,000-foot gasser during the early days of Hewitt in the 1,200-foot sand in its No. 4 on the Opal Rexroat A farm, in Section 15-4s-2w, which is still making gas, and the same company brought in a 12,000,000-foot gasser in its No. 7-A on the Phoebe Rexroat farm, in Section 10-4s-2w, last summer, in sand at 2,583 feet. At the time it was brought in, the Cottonbelt-Phoebe Rexroat No. 7-A tested rock pressure of 1,100 pounds. At latest test it showed rock pressure of 500 pounds.

The Wolverine gasser is producing from sand just touched at 2,780 feet. Its find was a surprise to the operators, as its north offset, below this level, failed to encounter the gas horizon. No. 111 was originally started in search of the 2,940-foot gusher pay, which was discovered in the Carter-Noble No. 33, about one-half a mile to the northwest.

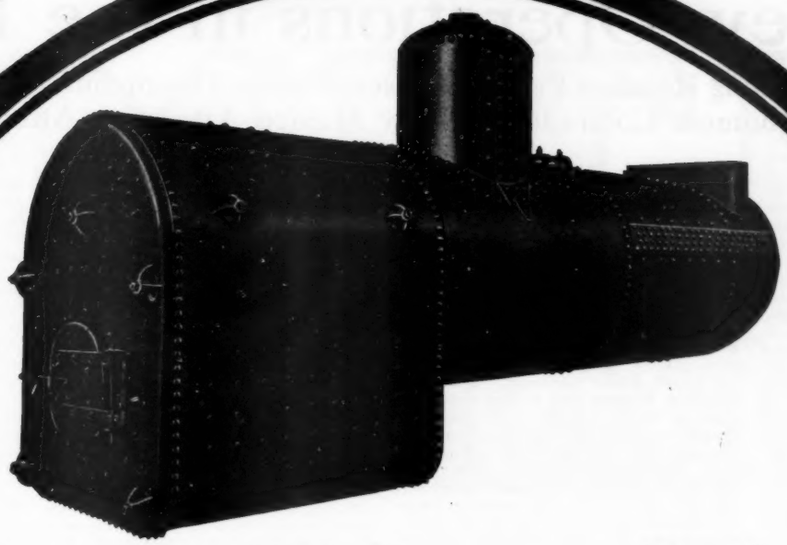
BEST GASSER AT ADA SHOWS 28,000,000 FEET

ADA, Okla., Jan. 28.—What is considered the best gas well in the Ada district is being completed by the American Oil & Refining Co. at its No. 2, on the Stark farm, in the center of the southeast quarter of the northeast quarter of Section 16, Township 4, Range 6.

Sand was struck at 1,338 feet, and the body was penetrated three feet, when the gas flow, which on a gauge showed 28,000,000 feet, came. Tested for rock pressure, the gauge indicated 450 pounds. This well was drilled with a rotary outfit and about two months has been required to reach the gas sand level.

UNION NATIONAL GAS CORP.

PITTSBURGH, Pa., Jan. 26.—Union Natural Gas Corp. will anticipate and pay April 1 all outstanding collateral trust 6 per cent gold bonds of the corporation dated April 1, 1913, and maturing April 1, 1925, and April 1, 1926, with interest to April 1, 1924, and a premium of 2 per cent. Bonds should be presented to Colonial Trust Co., trustee, at Pittsburgh, Pa.



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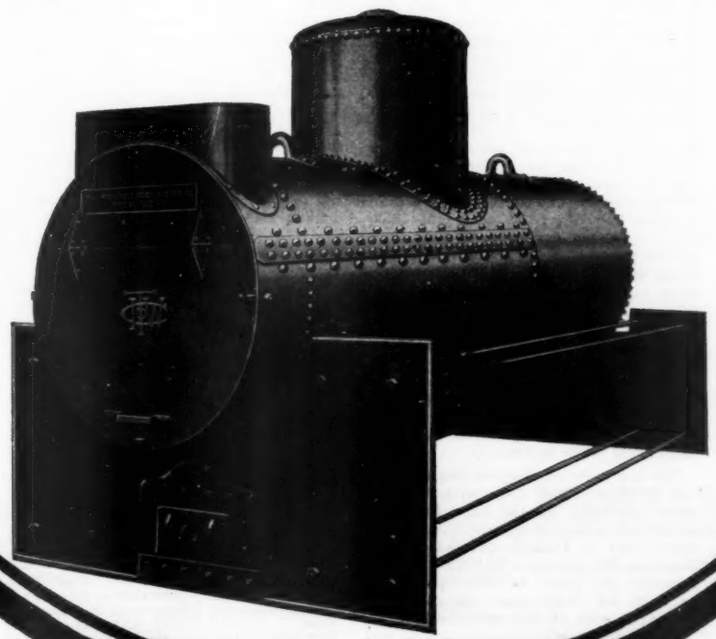

Few New Operations in the Rockies

Wyoming Reaches Peak in Present Fields; Disappointing Year in Montana. Colorado and New Mexico Attracting Attention

By Frank B. Taylor

The year of 1923 did not bring out many new operations in the Rocky Mountain region, New Mexico and Colorado producing one each and Wyoming producing two and three others still in abeyance. New Mexico has production of a high grade oil shut in on the Hogback structure, Colorado has a promising field at Wellington and Wyoming has a black oil field in the Notches, a gas field at Billy Creek and at Rex Lake, Medicine Bow, and Black Mountain, very good prospects for the future.

The year started off with a disappointment in the Sheldon Dome north of Riverton in Fremont County, Wyoming. This was confidentially expected to turn into a new light oil operation, and there are some chances of its doing so even now, but the first well was little better than a duster.

The next disappointment was the Southwestern Petroleum's dry hole at Saratoga. This was a deep well and tested all horizons. During January the Mutual Oil Co. took over the Merritt and Midwest holdings in the Big Muddy Field and the Consolidated Royalty Co. and Carter Oil opened the Billy Creek Field with a big gasser on the creek of that name in Johnson County. January closed with the Producers & Refiners' new plant at Parco ready to start refining oil and the eyes of the oil men were turned towards New Mexico through the Midwest finding a producer there on Hogback.

Mammoth's First Well

February started in with the Producers' & Refiners striking a big gas well on Enos Creek in the Big Horn Basin country. Many pipe lines were projected in this month and the Cat Creek Independent pipe line from that field to Winnett was sold under the hammer to the Continental Supply Co. Considerable interest was shown in the Teapot Dome at that time. The first well of the Mammoth Oil Co. reached the second sand and found water which dashed the hopes of the operators. The Union Oil Co. commenced drilling on the Wellington structure in Colorado and Harry Sinclair stated that the Mammoth would drill three Lakota sand wells in the Teapot. These three wells all stopped at different levels, having developed production in the shale or in sands. The month closed with operators preparing for extensive wildcatting. March was ushered in with the Midwest bringing in the Notches operation. This field is located in Natrona County, Wyoming, and is a producer of black oil. It was productive over much of the year and the oil is used for asphalt; however, the field is quiet as the market for this grade of crude is small. Several oil companies started building gasoline plants at Salt Creek to take care of the gas from the wells on their holdings and the North & South Railroad commenced work on its right of way from Casper to Montana. The month closed with the Ohio Oil Co. starting drilling operations in the Oregon Basin in Park County.

April saw a division of opinion regarding the prorating of runs in the Salt Creek Field. Many of the operators wished to increase the runs to 100 per cent.

Wyoming's First Rotary

The first rotary outfit moved in to the Billy Creek Field in Johnson County in April.

Cat Creek Extended

In May the Devereaux Oil Co. opened the western extension of the Cat Creek Field in Montana with a well that started off at 500 bbls. The Illinois Pipe Line Co. completed the line from Salt Creek to Illco, near Casper, giving the Salt Creek Field another outlet and the Sinclair commenced work on the Teapot to the Kansas line by starting construction work on the Teapot to Clayton, part of its line, and also commenced work on a large tank farm at Clayton. The Fargo Oil Co. started work on the Poison Spider to Casper pipe line to carry the black oil from the Poison Spider to Casper. The Producers & Refiners also started construction on the line from Salt Creek to Casper and then to Parco over on the Union Pacific, crossing over half of the State and with a length of more than 100 miles. A test of production of all the Salt Creek wells was made to form a basis for the prorating of the crude output from the different leases. In the field, Skull Creek, in Weston County, came in a failure and the saddle that was thought the poorest part of Teapot by some proved to be the best territory yet discovered. The Midwest brought in a second well in New Mexico rated at 700 bbls. and the Producers & Refiners had a showing in the wildcat near Thornton, Wyo.

The Sage Creek Petroleum Co. struck a heavy gas flow on the Buffalo Basin structure in the Red Desert country, northwest of Rawlins, and created considerable excitement in that region for a time in June. The Poison Spider Field in Natrona County showed considerable activity during this month due to the operators there endeavoring to increase the black oil production. Towards the last of the month the Southwestern Petroleum Co. drilled into a deep sand south of Medicine Bow in a wildcat well and opened what is thought to be a new field.

The month of July opened with the Producers & Refiners making a shallow strike on Simpson Ridge, between Rawlins and Medicine Bow, in a deep wildcat. The oil was found at about 600 feet. The Midwest abandoned the deep test on the Midway Dome, north of Casper about 12 miles. This well had been drilling for about four years and found nothing.

Craig, Colo., First Showing

In August the interest of the oil men turned to western Wyoming, where some activity developed in Lincoln County and a small excitement was created at Craig, Colo., where The Texas Co. found a pocket of oil in a shale formation while drilling a deep test. In Salt Creek the operators asked for the field to be opened to a 100 per cent basis of production.

The Mutual Oil Co. and the Consolidated Royalty Oil Co. announced their intention to drill a wildcat well south of Waltman, in Natrona County, on a new structure early in September. The Fargo Oil Co. starts oil through its line from the Poison Spider to Casper. The deep tests started to the Lakota sands at Salt Creek find paying production at different points above the sand and stop to produce from same. Considerable interest was manifested in the Oregon Basin country near Cody, Wyo. Midwest Refining Co. struck a gas well about 900 feet on Casper Creek about 30 miles northwest of Casper.

October came in with heavy unprecedented floods all over the Rocky Mountain region. Not only were the roads to the fields washed out but the fields themselves suffered heavily and the railroads abandoned some of the lines. The Producers & Refiners started shipments of crude through the Salt Creek to Casper and Parco pipe line.

In November the Utah Oil & Refining Co. found the Tensleep sand in the Black Mountain well, about 30 miles east of Thermopolis, in Warm Springs County, and it appears to be a well good for 500 bbls. of black oil. The wildcat drilling at Rex Lake in Albany County by the Ohio Oil Co. came in a gasser and later showed for an oil producer. Salt Creek appears to have reached its high point of production and the Ohio struck a gusher good for 2,000 bbls. at Lance Creek in Niobrara County. The Producers & Refiners found the Lakota dry on the east side of Salt Creek and the Union Oil Co. struck gas in the wildcat near Wellington, Colo., that later sprayed oil and appeared the discovery well for a new field.

During December the completion of the test at Salt Creek showed the field with a potential production around 155,000 bbls. daily if produced at capacity. Six hundred wells are to be drilled in the field in 1924. The Wyoming Petroleum Club was formed at Casper. Several oil firms were looking into the possibilities of Tertiary horizons carrying oil in commercial quantities and wells are to be drilled in 1924 to test the theory. The Midwest Refining Co. commenced operations on its great electrical plant at Salt Creek.

Outlook Very Bright

The year 1924 looks especially bright for the oil operator in the Rocky Mountain region. While the potential fields not yet developed are still numerous in this region, the demand for oil increases and the market advanced sharply during the first week of January showing a trend that has heartened the oil men greatly. Much wildcatting is being promoted at this time for the coming season and Wyoming appears to be the territory to be explored in the main with Montana next and then Colorado and New Mexico with Utah and Idaho last. There appears to be very little interest shown in either of the Dakotas and Nebraska. The Baker anticline that extends from Baker, Mont., to Lemmon, S. D., is now being drilled and if found productive will create activity in western South Dakota, but Nebraska has no activity anywhere nor any prospects that are considered worthy of mention. The Mutual Oil Co. has spudded in a wildcat about 7 miles from Hot Springs, S. D., and this is the only well drilling in that State at present.

Review by States

Wyoming has by far held the interest of the oil operators of the Rocky Mountain region the past year, both in wildcatting and development of known fields. However, the State has reached its peak of production unless fields now unknown are discovered. The long predicted time when the oil men would start development of the secondary structures has arrived and deep tests are drilling on structures that have been left alone during the hectic period for the more pronounced fields.

The possibilities are considered good

(Continued on Page 176)

LESS COMPLETIONS IN CENTRAL WEST BUT INITIAL PRODUCTION WAS HIGHER

By Whit

The old Central West Field, comprising northwestern Ohio, central Ohio, Indiana and Illinois completed fewer wells in 1923 than in the previous year, but the oil wells averaged higher in initial production than those of the 1922, showing that had there been the demand for oil sufficient to warrant more field operations the Central West would have been able to supply as much new production as it had done the year before. There were 1,774 wells completed in the entire division in 1922, as against 2,000 the previous year, a falling off of 226. The new production was 24,233 bbls., a gain of 5,494 bbls., over the record of 1922. There were 411 dry holes, 6 more than the year before and 404 gas wells, or 8 fewer than in 1922. The number of oil wells completed last year was 959 and they averaged 25 bbls., while the 1,171 oils wells finished in 1922 averaged only 16 bbls. per well. The gas companies were as active as ever and the number of gassers brought in was practically the same as the year before, while the percentage of gassers was slightly higher, because of the falling off in the total number of wells finished.

The low price of oil prevailing throughout the year caused the abandonment of many old wells. In the Lima Field 576 were "pulled out" as against 373 the year before and in Indiana 177 were abandoned or 93 more than in 1922. Illinois, however, did better in this respect and only 36 old wells were abandoned, as compared with 71 the previous year.

The falling off in operations was felt in each of the fields. Lima showed a drop of 175 completions, Central Ohio 254, Indiana 66 and Illinois 121.

The old Lima Field in new production made a notably good record last year. Wood County showing the greatest number of completions and the largest total of new production. Deeper drilling in the Trenton Rock brought to the surface much oil that was not believed to exist in the early days of the field when operators were not so well acquainted with the nature of that great storehouse of oil.

Under the stimulus of higher prices for crude the Central West, especially the Northwestern and Central Ohio and along the line of Jay and Randolph Counties in Indiana will be the scene of much drilling this year.

Lima Field in 1923

The completions in the Lima Field of northwestern Ohio during the year of 1923 were recorded each month as follows:

Month—	Comp.	Prod.	Dry	Gas	Old Wells Abd.
January	33	705	3	0	13
February	33	892	2	0	24
March	32	650	3	0	14
April	56	1,024	3	2	17
May	51	1,455	4	1	37
June	55	1,615	13	2	48
July	77	1,847	10	2	10
August	84	1,441	6	2	22
September	70	1,416	2	3	19
October	60	745	13	4	51
November	51	729	8	0	6b
December	30	632	4	3	256
Total 1923	697	13,151	75	17	576
Total 1922	522	7,406	61	12	373
Difference	175	5,745	14	5	203

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas	Abd.
Wood	142	3,196	10	5	228
Hancock	93	2,028	5	0	102
Allen	84	777	4	1	61
Auglaize	36	600	6	0	34
Sandusky	29	225	2	0	36
Mercer	101	1,203	19	0	38
Van Wert	32	481	3	3	22

(Continued on Page 176)

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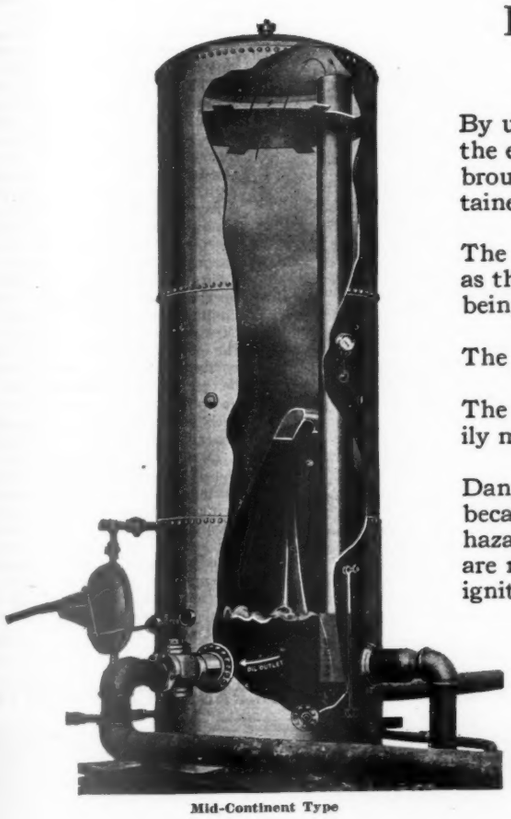

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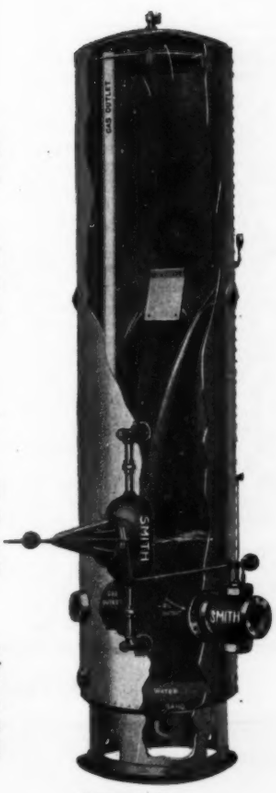

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Lubrication Experiments Cause Debate

Flash Point and Viscosity Center of Controversy Following Odd Report of Practical Tests of Seven Oils

The tests, Mr. Nickinson said, were carried out upon seven different oils, ranging in price from 1s. 6d. to 8s. 6d. per gallon. The experiments were carried out upon new or recently overhauled engines on vehicles in every-day work. Records were kept of oil and fuel consumption, cylinder and crankshaft wear, and carbon deposit. The engines were run for six months, the distance covered varying from 20,000 to 24,000 miles.

The following information is given in the paper concerning the oils: No. 1—An expensive super-refined oil, submitted as the last word in lubricants. No. 2—An oil containing deflocculated graphite. No. 3—A cheap brand, sold as suitable for bus lubrication. No. 4—No. 1 Russian. No. 5—This oil was submitted as a new departure in lubricating oils, the particular advantages being "that the carbon deposits in the cylinder are greatly reduced, the oil only giving about one-half the carbon deposit of a first-class oil, in addition the cylinder wear is considerably less after a period of running than when ordinary oil is used." No. 6—A compounded oil containing 2 per cent of fatty oil; the fatty matter was stated to be castor oil. No. 7—A medium-priced oil, from the same suppliers as No. 1.

What Is "Better Lubrication"?

A perusal of the motoring press, the speaker said, almost leads one to imagine that lubrication trouble and carbon deposit in internal combustion engines are inseparable and can only be avoided provided that a particular brand of oil is used. Indeed, a very frequent argument put forward by representatives of the various oil concerns is that their product gives better lubrication than any other. Questions as to what this "better lubrication" is, he said, are never satisfactorily answered. The questioner is generally referred to such points as viscosity, flash point, carbonization, and so on; but as to why one oil should be superior to another no straightforward answer is given. It was in order to arrive at some definition of this "better lubrication" that he carried out his tests, and it might serve a useful purpose to given the conclusions he arrived at, which he himself admits are not very definite:

Each Satisfactory

In spite of the differences between the original oils and the samples drawn from the crank case, each of the seven oils gave satisfactory lubrication, none of the engines showing signs of lack of lubricant. Oil No. 4 appeared to be very stable, showing the least fluctuation from the original oil. In fleet operation it gave most excellent results. Oil No. 3 had also given good results in fleet operation. There was very little difference between the seven oils in respect of carbonization and carbon deposits. Fuel dilution rarely exceeded 5 per cent. Oil No. 4 shows the lowest figures, although this engine was run during the winter months. It would not appear to be necessary to drain out the crank case every 1,000 miles as advocated in some quarters; the waste of oil and the time taken in large fleets would counteract any advantage which might accrue from this practice. The cry is for economy in the use of petroleum products. As these vehicles were part of a commercial fleet, and expected to pay their way, the oil that cost the least and gave satisfactory results would be the best oil to use. There is no object in using an expensive oil when one costing 50 per cent less will give the same results. Omitting the oil consumption figures, there is, he said, practically and commercially no difference between the results obtained with the seven oils. Certainly oil No. 2 does show a reduction in the cylinder wear, but not sufficient to justify its extra cost. The results of these tests do not show what this "better lubrication" is, except that the cheapest oil has done the job as satisfactorily as the most expensive oil.

Discussing some of the facts brought out by the experiments, the speaker said that the flash point of the oils after use approximated to the flash point of the fuel extracted from the oil, and it would appear from this that the flash point of an oil is not much guide as to its lubricating qualities.

The presence of siliceous matter in the oil, arising from cylinder and piston wear, and dust drawn into the crank case, did not appear to have any detrimental effect upon the bearings, and no reduction in cylinder wear was found when the oil sumps had been drained and fresh oil supplied every month.

The values obtained for acidity appear fairly constant for all the samples. This acidity is no doubt due to oxidation, but the speaker would not venture to offer any views as to whether this acidity increases the "oiliness" of an oil. The fact remained that the oil does become acid in use—a fact confirmed in certain experiments upon Liberty aero engine oil in America.

Says Tests Inconclusive

Felix Hookham (Anglo-American Oil Co., Ltd.), in opening the duscussion, said he looked at this matter from a detached point of view, inasmuch as he was attached to a company which imports a very large quantity of oil and was chiefly concerned in maintaining uniform standards of high-grade mineral lubricating oils, leaving the blenders to study the needs of individual consumers. The general impression left upon his mind from reading the paper was that we are little nearer a solution of the problem of the best lubrication for any particular purpose, on account of the inconclusive data obtained in the tests. The author had set out to define "better lubrication," but he was tackling a very difficult problem. Good lubrication had to be defined in relation to the particular needs, but how to determine the characteristics was still unsettled. It was insufficient to say that the trials showed that a cheap oil is practically as good as the most expensive, and the paper did not define one characteristic whereby we can say that a certain oil or set of oils is the best and that other oils are no good. To obtain the most suitable grade of oil for a particular purpose could only be done as the result of experience and the discriminating use of all the available tests. The best oil for a particular purpose could only be obtained by going to a reputable firm of oil blenders who had a good name to maintain. Large buyers, of course, employing their own engineers naturally tried to get down to fundamentals and to buy on a British Engineering Standard specification basis. It might be possible to buy more cheaply in this manner, but even then there was the risk of a failure which might prove costly, whilst the cost of testing might be an expensive matter and then give no conclusive data at the end. Certainly, satisfactory buying to specification appeared to be a long way off as yet.

Dr. W. R. Ormandy said it was only those engaged in large transport undertakings who had the opportunity of carrying out tests of the nature referred to, because it had to be admitted that neither the physicist nor the chemist is in a position to give any tests which are adequate to enable us to say that any particular oil is the best for any particular purpose. That was a distinctly unpleasant admission for a scientist to

WILL "ANY OLD OIL" DO?

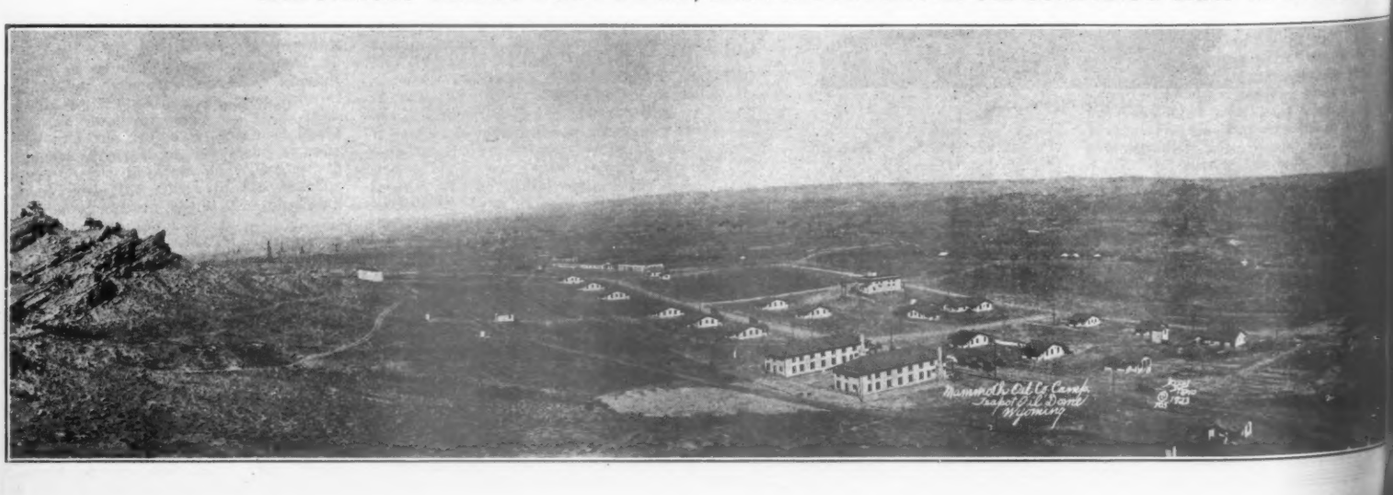
At a recent meeting in London of the British Institution of Automobile Engineers, a paper was read by H. D. Nickinson, of Thomas Tilling, Ltd., London motor omnibus proprietors, upon experiments which have been carried out in the lubrication of commercial vehicle engines. The paper has a special interest in regard to the qualities of oils necessary for efficient lubrication and the discussion which followed from many varied standpoints, as reported in the Oil and Color Trade Journal, London, offered such novel views regarding the lubrication of motor engines that it is republished herewith.

Analyses of Oils Nos. 1 to 7

Oil—	1	2	3	4	5	6	7
Specific gravity at 60 deg. F.	0.936	0.923	0.929	0.911	0.917	$0.533	0.934
Viscosity. 140 deg. F.	178	137	155	132	177	148	125
(Redwood.) 200 deg F. in seconds	56	52	56	53	59.5	54	51
Flash point. Deg. F. (P.M. closed)	360	360	350	387	347	375	338
Pour Point (A.S.T.M.)	Flows at 16 deg. F.	Flows at 16 deg. F.	Sets at 16 deg F.	Flows at 16 deg. F.	Flows at 16 deg. F.	Flows at 16 deg. F.	Flows at 16 deg. F.
Saponifiable oil	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
Conradson. Carbon, per cent	0.1	No record	0.5	0.1	0.35	0.13	0.1
Heat loss per cent, 1 hour at 200 deg. C. in Archbutt's vaporimeter	15	16	24	12	17	25	20

Note—Pour point tests not carried below 16 deg. F.

THE FAMOUS TEAPOT DOME LEASE, SHOWING MAMMOTH OIL COMPANY'S CAMP AND TANK FARM



have to make. The author had stated that the flash point is no measure of the lubricating value of an oil, and he attached more weight to the evaporative loss. Ten years ago Mr. Lester and himself recorded the results of a lot of work on the relationship between the flash point and the heat loss of lubricating oils, and it was found that if the heat loss experiments be carried out on certain prescribed lines, an oil with a flash point of 370 degrees to 380 degrees Fahrenheit had a comparatively low heat loss. At flash points below 370 degrees Fahrenheit the heat loss was very considerable. It was not necessary to give reasons for this because obviously the flash point was only a measure of the temperature at which the vapor pressure of the oil is reached.

Organized Research Necessary

Organized research was necessary into this subject of the heat losses of oils in relation to their behavior in the crank case of an internal combustion engine, and he sincerely hoped this problem will be tackled by the physicist or the chemist or the motor industry. If they took a large number of oils which had been in use in a crank case for a considerable time—some months—and filtered the dirt off and then heat them and drive off the volatile matter until the flash point is about equal to the original flash point, they would have an oil, in many cases, with a high viscosity at higher temperature than the original oil with which they started. Whether this was due to polymerization or chemical change taking place due to gradual oxidation he could not say, but it was a fact that so far from any crank case oils being worse after use for a long time, they are sometimes much better if the dirt is filtered out and the volatile driven out. His own experience was that the cheapest oil obtainable — an ordinary dark steam lubricating oil, so thick that it would barely run out of the one-inch neck of a can—thinned down with kerosene, gave almost the best results. That was actually done for two years without the slightest damage to the engines. Personally, he thought it was a very fortunate thing for those gentlemen who mixed oils to sell to the public that there is no particular test which will enable us to fix the absolute value of the lubricating oil, because, if one only had a sufficient imagination, one would be an excellent oil salesman.

Engineer or Chemist

Professor J. S. S. Brame, associated with some of the lubricating oil committees established by the British Engineering Standard Association, expressed surprise at some of the results obtained by the author, because, like Dr. Ormandy, he was rather forced to the conclusion that the chemist could not tell the engineer very much about the necessary qualities in his oil; also, he could not see how the chemist was going to tell, when a sample was sent to him, whether the oil was good or bad for the particular purpose. On reflection, however, he was not so despondent as Dr. Ormandy. Professor Brame directed his remarks to two specific tests, the carbon residue test and the volatility test, because, although the other tests were useful and valuable in many respects, he did not think they threw much light upon certain characters that we must insist upon. In spite of the little difference that was shown in the behavior of the oils for which very high claims had been made, in most cases, and oils for which no special claims had been made—claims which were reflected in costs ranging from 1s. 6d. to 8s. 6d. per gallon—he did not think we must jump to the conclusion that oils carefully refined to the most careful specification were not contaminated. All one could say, honestly, was that of the seven oils tried there was no appreciable difference between the super-refined oils and what he would term a well-refined oil, because, with one exception, the evidence pointed to the fact that all the oils had been refined to a degree which rendered them suitable for this class of lubrication.

Noting the different qualities of which a motor oil should consist, lubrication, of course, came first; secondly, we would say freedom from troubles incidental to the use of a material more or less decomposable at the temperatures which it might easily reach. All that, of course, was reflected in evaporation and in carbonization. From the point of view of lubricating properties, the records practically failed to show any difference between these oils. This he attributed to the oils having a suitable viscosity, and the difference in frictional losses between the different oils was minute in comparison with the total power lost. In one case only were the bearings reported as rather badly worn, and this with what was described as an expensive super-refined oil, submitted as the last word in lubrication.

Carbonization Tests

With regard to the question of suitability in use, apart from this question of lubrication, the only other data which we had in the paper referred to the Conradson coking test and the volatility test, and the author found very little difference between the carbonization values of the different oils. Professor Brame was not surprised at this, because they all gave carbonization tests of a low order. The only standard specifications that he was aware of were those issued by the United States authorities for a Liberty aero engine oil and a motor bicycle oil, and they gave a limit, for their highest grade, of 1.5 per cent. We were well below that. For a second grade oil the United States authorities gave a limit of 2 per cent. In practice it seemed to him that very much must depend on the quantity of lubricant reaching the zone of high temperature, where carbonization would take place. A bad oil, from the carbonization point of view, would, he admitted, under bad conditions, give worse results than a good oil, but he could quite conceive conditions which were extremely unfavorable to a good oil and favorable to a bad oil, and from which we might get totally false ideas as to the value of the respective oils. But the necessity for some standard test in relation to this property of carbonization certainly did exist, and he was not at all satisfied that the ordinary Conradson coking test was a proper test. He said that for this reason, that when we carbonized we carbonized oil in an atmosphere of oil vapor, and these conditions were entirely different from carbonization in the cylinder, where there were hot gases and a fair proportion of oxygen always present. Therefore, oxidation took place to a pretty high degree, and the oil was not merely carbonized, but it underwent chemical change before this took place. It was the oxidized product, probably, that was the main cause of the trouble.

Oxidation Products

In this he was rather in agreement with the American authority, Dr. G. E. Waters, who published one of the technical papers of the Bureau of Standards, and who said that carbonization was due primarily to the formation of asphaltic bodies — these were the bodies which Professor Brame regarded as the oxidation products — rather than active cracking. Could not the much higher coking value which the author had found for his oils be ascribed to that fact? Dr. Waters had suggested a test in which the oil was heated to a temperature of 250 degrees for three or four hours, and then the amount of asphaltic matter in the oil estimated. Probably we should develop a test on the lines of first submitting an oil to a long period of heating, exposed to air, to give off ashes of oxidation, and then test the coking value, and he ventured to think that if that had been done by the author he would have found some rather astonishing figures, for the only oil which he had described as giving a very dirty crank case and a good deal of deposit, viz., oil No. 7. which had one of the lowest Conradson figures of the whole lot, 0.1 per cent, and any chemist, on the Conradson figure, would be justified in saything that this oil would not be likely to give trouble from carbonization.

With regard to volatility, the volatility figures in the paper varied between 12 and 25 per cent at 200 degrees, and one would agree with the author that high volatility ought to mean that there would be rather a large consumption figure. We knew, from the author's results, how very variable the consumption figures for oil might be for different engines, so that one would not place too much importance on that question. He did not think that, given an oil which met other conditions, the author need be apprehensive that the volatilization would be such that he would get gummy residues and sticking, etc., which he anticipated. Arising out of the question of volatility, there was one matter which he would like further information on, and that was with regard to dilution. The author had estimated the amount of dilution fuel in the crank case chamber oil by steam distillation. He would like to ask at what temperature the author did that. Was it a low temperature—because some of his oils gave as much as 22 to 25 per cent volatile at 200 degrees Centigrade, and it appeared that it would have been a very important point to be quite sure that under the conditions of the test nothing had volatilized from the original lubricating oil?

Mr. Nickinson, replying to the last question, said the oil was simply taken in an ordinary flash and steam blown, so that the temperature would be in the neighborhood of 100 degrees Centigrade. He also tried heating the oil in a side arm flask and passing coal gas through it and condensing the gas in an ordinary boiling tube and letting the gas burn, and the results were practically identical. The oil in this case was heated to between 150 degrees and 170 degrees Centigrade; it was never allowed to go beyond 170 degrees. There might have been a difference of ½ per cent between the results of the two tests. As to the Waters test, the only reason this was not used was that it took too long for commercial conditions at the present time. If the method were simplified he would be very pleased to use it, because he agreed with Professor Brame that it was the condition of the oil after it had oxidized that gave the carbon deposit, and No. 7 was a very much burned-out oil.

Chemist on Tests

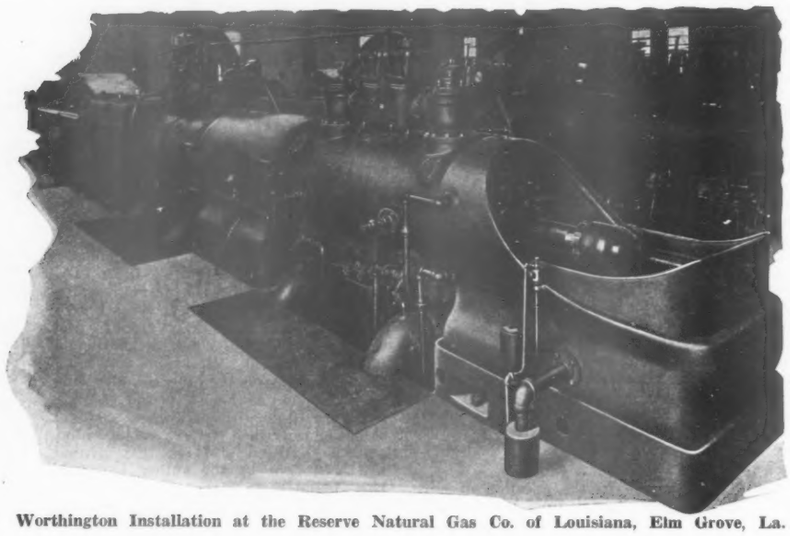
W. Lee, dealing with the matter from the chemical point of view, said we were all up against the fact that we did not know yet of a sufficiency of tests which would enable us to say that a certain oil was good or bad for internal combustion engines. We were able, however, to make a rough division of oils. The only way to get at facts was not to carry out tests on solitary engines or on one oil, but to get at the known composition and record the whole of the results over a long period. The point of composition, if known, would have helped considerably in these experiments. So far there had been no long continued tests that we could get much information from. The author had shown that we could run on a simple distilled thin oil and get good results. At least two of these oils, if not four, were simple distilled oils, without cylinder stock, but there was a danger. We could not immediately conclude from that that every type of engine could be similarly run. So far as lubrication was concerned, there was

(Continued on Page 150)

THE ESCARPMENT SEEN AROUND THREE SIDES OF THE DOME IS FOUR MILES AWAY ON FAR SIDE

WORTHINGTON

15 cents in Two Years For Repairs to Worthington Gas Engines



Worthington Installation at the Reserve Natural Gas Co. of Louisiana, Elm Grove, La.

The Reserve Natural Gas Company of Louisiana has been operating Worthington, Snow type, gas engines for two years without a single shut down for major repairs. The only replacements were igniter washers at a cost of 15 cents.

These engines in their two years run have never been overhauled and their operation is so satisfactory that they will be permitted to complete their third year before making a general inspection.

Minor repairs will, of course, usually amount to somewhat more than 15 cents, but the facts indicate that only in an engine of excellent construction could such service be possible.

Some Other Service Reports

The first gas engine built by Worthington 22 years ago is still running.

Three engines installed by the Natural Gas Company of West Virginia over ten years ago have never failed to deliver service.

The South Penn Oil Company, Folsom, West Virginia, has an engine which has been running 18 years with the original cylinders.

The Manufacturers Light and Heat Company in operating a Worthington engine for eight years find but 1/32″ wear in cylinder.

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Gas Engines
Diesel Engines
Gas Compressors
Gas Expanders
Air Compressors
Vacuum Pumps
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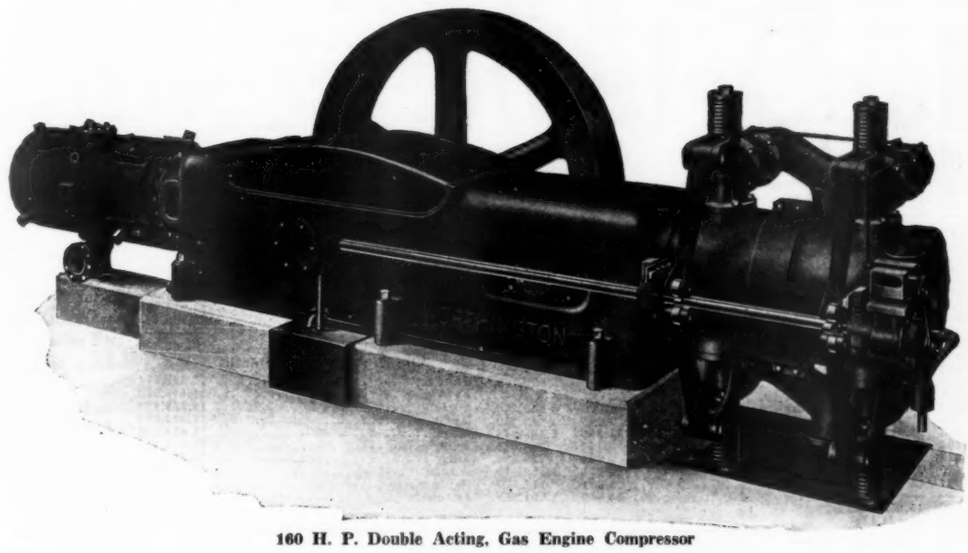
WORTHINGTON PUMP AND MACHINERY CORPORATION

Executive Offices: 115 Broadway, New York City. Branch Offices in 24 Large Cities

WORTHINGTON

WORTHINGTON

New 80-320 Gas Engine Compressor, Double Acting Four Cycle, Horizontal



160 H. P. Double Acting, Gas Engine Compressor

Based on the design of the large, Snow type, Gas Engine, Worthington has developed an engine and compressor of smaller size but of great flexibility. It is built in four sizes.

80 H. P. Single Acting, Single Cylinder
160 H. P. Double Acting, Single Cylinder
160 H. P. Single Acting, Twin Cylinder
320 H. P. Double Acting, Twin Cylinder

All have 18½-inch diameter by 20-inch stroke, power cylinders and operate at 180 R.P.M.

The design is such that if the power requirements should become too heavy for the 80 H. P. engine it can be converted into a 160 H. P. unit by replacing the single acting cylinder with a double acting cylinder and piston and adding inboard valve gear.

Should still further expansion be necessary, the outboard bearing can be removed and another crank shrunk on the extension provided for this purpose. Another cylinder and connecting rod assembly may now be installed. This will increase the engine capacity to 320 H. P.—four times that of the original unit.

The advantages of this arrangement are apparent. When the time for expansion comes, the capacity of the original unit can be enlarged without requiring the installation of new engines. The saving in money and space is considerable.

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WORTHINGTON

44.88

1923 BIGGEST YEAR IN OKLAHOMA PRODUCTION

(Continued from Page 80)

Osage-Eastern Kay	98,057	3,029,767
Tulsa	10,272	318,432
Okmulgee	18,765	581,715
Okfuskee, Seminole, Hughes, McIntosh	14,500	449,500
Muskogee-Wagoner	1,811	56,141
Creek	101,929	3,159,799
Pawnee	10,105	313,255
Payne	8,658	268,398
Kay-Noble	91,083	2,823,573
Garfield	7,091	219,821
Carter	49,956	1,548,636
Stephens-Cotton	15,261	473,091
Caddo	2,536	78,616
Garvin	4,948	153,388
Pontotoc	446	13,826
Total	450,188	13,958,828
Same period 1922	394,211	12,220,541
Increase	55,977	1,738,287

April

Washingtor	7,576	227.280
Nowata-Rogers	7,177	215,310
Osage-Eastern Kay	118,576	3,557,280
Tulsa	9,792	293,760
Okmulgee	18,719	561,570
Okfuskee, Seminole, Hughes, McIntosh	11,512	345,360
Muskogee-Wagoner	1,808	54,240
Creek	101,850	3,055,500
Pawnee	9,220	276,600
Payne	8,299	248,970
Kay-Noble	104,259	3,127,770
Garfield	6,775	203,250
Carter	50,664	1,519,920
Stephens-Cotton	14,667	440,010
Caddo	2,070	77,100
Garvin	6,479	200,849
Pontotoc	444	13,320
Total	479,987	14,399,610
Same period 1922	398,260	11,947,800
Increase	81,727	2,451,810

May

Washington	7,569	234,639
Nowata-Rogers	7,143	221,433
Osage-Eastern Kay	128,501	3,983,531
Tulsa	9,792	303,552
Okmulgee	18,871	585,001
Okfuskee, Seminole, Hughes, McIntosh	11,452	355,012
Muskogee-Wagoner	1,775	55,025
Creek	102,563	3,179,453
Pawnee	9,187	284,797
Payne	8,716	270,196
Kay-Noble	116,342	3,606,602
Garfield	6,761	209,591
Carter	52,095	1,614,945
Stephens-Cotton	15,204	471,324
Caddo	2,225	68,975
Garvin	6,479	200,849
Pontotoc	447	13,857
Total	505,122	15,658,782
Same period 1922	423,369	13,124,439
Increase	81,753	2,534,343

June

Washington	7,507	225,210
Nowata-Rogers	7,009	210,270
Osage-Eastern Kay	138,850	4,165,500
Tulsa	9,490	284,700
Okmulgee	18,637	559,110
Okfuskee, Seminole, Hughes, McIntosh	12,500	375,000
Muskogee-Wagoner	1,779	53,370
Creek	110,224	3,306,720
Pawnee	8,706	261,180
Payne	8,614	258,420
Kay-Noble	111,297	3,338,910
Garfield	6,308	189,240
Carter	55,343	1,660,290
Stephens-Cotton	14,272	428,160
Caddo	2,115	63,450
Garvin	5,993	179,790
Pontotoc	447	13,410
Total	519,091	15,572,730
Same period 1922	425,237	12,757,110
Increase	93,854	2,815,620

July

Washington	6,816	211,296
Nowata-Rogers	6,804	210,924
Osage-Eastern Kay	147,324	4,567,044
Tulsa	8,973	278,163
Okmulgee	18,397	570,307
Okfuskee, Seminole, Hughes, McIntosh	13,100	406,100
Muskogee-Wagoner	1,710	53,010
Creek	93,698	2,904,638
Pawnee	8,159	252,929
Payne	7,655	237,305
Kay-Noble	105,790	3,217,490
Garfield	6,142	190,402
Carter	46,576	1,443,856
Stephens-Cotton	14,163	439,203
Caddo	2,150	66,650
Garvin	6,362	197,222
Pontotoc	440	13,640
Total	492,264	15,260,184
Same period 1922	438,425	13,591,175
Increase	53,839	1,669,009

August

Washington	6,790	210,490
Nowata-Rogers	6,806	210,986
Osage-Eastern Kay	133,572	4,140,732
Tulsa	8,842	274,102
Okmulgee	19,128	592,968
Okfuskee, Seminole, Hughes, McIntosh	18,715	580,165
Muskogee-Wagoner	1,714	53,134
Creek	85,937	2,664,047
Pawnee	7,937	246,047
Payne	7,367	228,377
Kay-Noble	82,015	2,542,465
Garfield	6,060	187,860
Carter	45,136	1,399,216
Stephens-Cotton	14,104	437,224
Caddo	2,286	70,830
Garvin	6,388	198,028
Pontotoc	400	12,400
Total	453,196	14,049,076
Same period 1922	427,907	13,265,117
Increase	25,289	783,959

September

Washington	7,098	212,940
Nowata-Rogers	6,515	195,450
Osage-Eastern Kay	120,147	3,604,410
Tulsa	9,533	285,990
Okmulgee	19,696	590,880
Okfuskee, Seminole, Hughes, McIntosh	22,489	674,670
Muskogee-Wagoner	1,600	48,000
Creek	88,051	2,641,530
Pawnee	7,513	225,390
Payne	7,405	222,150
Kay-Noble	61,784	1,853,520
Garfield	5,949	178,470
Carter	46,378	1,391,340
Stephens-Cotton	13,921	417,630
Caddo	2,130	63,900
Garvin	5,650	169,500
Pontotoc	445	13,350
Beckham	770	23,100
Total	427,074	12,812,220
Same period 1922	419,984	12,599,520
Increase	7,090	212,700

October

Washington	7,086	219,666
Nowata-Rogers	6,604	204,724
Osage-Eastern Kay	116,213	3,602,603
Tulsa	9,533	295,522
Okmulgee	20,259	628,029
Okfuskee, Seminole, Hughes, McIntosh	22,828	707,668
Muskogee-Wagoner	1,511	46,841
Creek	84,115	2,607,565
Pawnee	7,975	247,225
Payne	7,844	243,164
Kay-Noble	56,403	1,748,493
Garfield	5,753	178,343
Carter	47,775	1,481,025
Stephens-Cotton	14,907	462,117
Caddo	2,118	65,658
Garvin	5,857	181,567
Pontotoc	443	13,702
Beckham	899	27,869
Total	418,122	12,961,782
Same period 1922	426,521	13,222,151
Decrease	8,399	260,369

November

Washington	7,112	213,360
Nowata-Rogers	6,154	184,620
Osage-Eastern Kay	114,240	3,427,200
Tulsa	9,928	297,840
Okmulgee	21,692	650,760
Okfuskee, Seminole, Hughes, McIntosh	21,625	648,750
Muskogee-Wagoner	1,645	49,350
Creek	83,298	2,498,940
Pawnee	8,152	244,560
Payne	7,661	229,830
Kay-Noble	51,738	1,552,140
Garfield	5,691	170,730
Carter	50,066	1,501,980
Stephens-Cotton	13,522	405,660
Caddo	1,979	59,370
Garvin	5,512	165,360
Pontotoc	440	13,200
Beckham	699	20,970
Total	411,154	12,334,620
Same period 1922	420,452	12,613,560
Decrease	9,298	278,940

December

County—	Daily Av.	Mo.Prod.
Washington	7,063	218,953
Nowata-Rogers	6,076	188,356
Osage-Eastern Kay	103,533	3,209,523
Tulsa	9,881	306,311
Okmulgee	21,605	669,755
Okfuskee, Seminole, Hughes, McIntosh	20,538	636,678
Muskogee-Wagoner	1,682	52,142
Creek	81,252	2,518,812
Pawnee	8,131	252,061
Payne	8,030	248,930
Kay-Noble	49,763	1,542,653
Garfield	5,666	175,646
Carter	50,119	1,553,689
Stephens-Cotton	13,381	414,811
Caddo	1,961	60,791
Garvin	4,825	149,575
Pontotoc	417	12,927
Beckham	666	20,646
Total	394,589	12,232,259
Same period last year	425,336	13,185,416
Difference	30,747	953,157

Oklahoma Production by Counties

Washington	2,658,956
Nowata-Rogers	2,490,191
Osage-Eastern Kay	44,085,491
Tulsa	3,517,545
Okmulgee	7,326,202
Okfuskee, Seminole, Hughes and McIntosh	6,048,425
Muskogee and Wagoner	642,499
Creek	34,711,524
Pawnee	3,161,345
Payne	3,048,557
Kay-Noble	28,519,486
Garfield	2,233,214
Carter	18,019,723
Caddo	833,467
Garvin	2,094,579
Pontotoc	161,856
Beckham	92,585
Total 1923	165,013,685
Total 1922	148,746,845
Difference	16,266,840

Production by Months

January	13,328,574
February	12,445,020
March	13,958,828
April	14,399,610
May	15,658,782
June	15,572,730
July	15,260,184
August	14,049,076
September	12,812,220
October	12,961,782
November	13,334,620
December	12,332,259
Total 1923	165,013,685
Total 1922	148,746,845
Difference	16,266,840

Production of Crude Petroleum From 1891 to 1923, Inclusive

Year	Bbls.
1891	88
1892	89
1893	10
1894	134
1895	27
1896	250
1897	433
1898	1,060
1899	2,324
1900	6,472
1901	10,000
1902	37,100
1903	138,811
1904	1,366,746
1905	8,562,731
1906	18,613,583
1907	43,524,123
1908	45,793,705
1909	47,859,211
1910	52,028,719
1911	56,969,627
1912	51,427,871
1913	63,579,671
1914	102,897,227
1915	117,910,444
1916	106,190,240
1917	97,674,354
1918	84,364,291
1919	85,588,588
1920	107,849,557
1921	115,673,576
1922	148,746,845
1923	165,013,685
Total	1,531,531,879

ULTIMATE STABILIZATION FORESEEN IF BEST INTERESTS ARE HEEDED

By J. C. Donnell
President the Ohio Oil Co.

A study of the history of the oil industry reveals numerous instances of the bringing in of single pools of crude oil each of which resulted in temporarily flooding the market and a consequent reduction in prices in such proportion as the supply exceeded the demand. Then, as the production of that particular pool commenced to decrease, the process of stabilization set in and continued until a condition of normalcy was reached.

J. C. Donnell

This trying time which we have been, and are still, passing through, is simply a repetition of our past experiences except that it is of far greater magnitude. The causes and results are the same now as they were them, the only difference being that in the year 1923 some five odd pools reached their peaks simultaneously instead of only one and notwithstanding the vast consumption, the country has been flooded with the greatest quantity of overproduction ever recorded and crude oil prices have been forced down to a figure considerably below the cost of production. Therefore, due to the far-reaching effect of this unusual situation, the process of stabilization will travel more slowly but I am solidly of the opinion that if the producer will keep constantly in mind the best interests of the industry generally and curtail his activities accordingly, a not far distant date will witness a converging of the lines of supply and demand toward ultimate stabilization.

ENGLAND IS EXCITED OVER OIL SHALE FIND

Deposits of oil shale on the Somerset Coast, opposite Burnham-on-Sea, England, have proved sufficiently valuable to warrant extensive development. About 40 gallons of crude oil per ton of shale have been obtained at an experimental plant at the village of Kilve, and it is understood that a company is now being formed to develop the deposits commercially; and it is planned to have permanent refineries in operation within 18 months, one at Kilve and one at Combwich. These plants are expected to handle a total of 250,000 tons of shale per year, the capacity to be increased to 600,000 tons within two or three years.

The London Star reports the find claimed to be one of the greatest and richest oil-bearing shale beds ever discovered. The bed, covering a large area, is said to have been a mining surface of 600 to 700 feet, which the experts say is unprecedented. The beds, it is declared, contain the highest qualities of oils, compared only with the Green River formation in Colorado, hitherto an unparalleled example of oil shale wealth.

Larrette Larkin, an English engineer, is quoted as reporting safe to base the commercial production of the beds at 9,000,000,000 tons of oil shale, with an oil content of more than 1,000,000,000 tons, valued at £3,000,000. He estimated the shale could be quarried for three shillings per ton.

Dr. W. Forbes Leslie, geologist, is reported saying the beds were a source of power from which England could draw for its industries without spending money on foreign oil. The magnitude of this discovery means that it can supply all its needs for cheap power, light and heat for centuries.

MASTER IN SWIFTSURE OIL

NEW YORK, Jan. 26.—Judge Francis F. Winslow in United States District Court has signed an order appointing R. P. Stephenson special master and authorizing him to call a meeting of the creditors of the Swiftsure Oil Transport Co. to act on an offer of composition. The Swiftsure Oil Transport was placed in receivership about two years ago, and recently filed a schedule showing liabilities of approximately $20,000,000, and assets less than $4,000,000. The court order stated that all proceedings in the case are to be stayed until the adjudication in bankruptcy.

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Big Canadian Developments Came Late

Heavy Oil Find in Eastern Alberta, Gas Field in Southern Alberta and in East, and Oil Strike in the Trenton Lime

By Victor Lauriston

CHATHAM, Ont., Jan. 28.—The most important developments in the Canadian fields in 1923 came almost at the close of the drilling season. These were, in western Canada, the striking of heavy oil in the British Petroleum's, Ltd., No. 2 well in the Irma-Viking Field, east central Alberta, and the proving of a large new gas field at Foremost, in southern Alberta; and in eastern Canada, the discovery of oil in the Trenton limestone in an entirely new and previously untested location.

It is practically impossible to give an intelligent idea of Canadian operations without specific reference to each individual test; because the present drilling is, except for a few isolated areas, a gigantic wildcat proposition, in which each test is located in what, if production develops, would prove a distinct and separate field.

Even in southwestern Ontario, where oil production has been known for 60 years or more, the present drilling is largely wildcatting. The Petrolia, Oil Springs, Bothwell and other shallow oil pools in corniferous limestone have been completely drilled and it is pretty well settled that there are no possibilities of extension. The Tilbury, Vienna and Niagara district gas fields still permit of some extension, but wells drilled recently in the old territory are relatively small, and it is recognized that if any large new gas production is secured, it must be found, either in deeper formations, or in entirely new areas.

Tests in Trenton Limestone

As a result of this conclusion, much of the recent drilling has been intended to test the Trenton limestone, the deepest producing formation in Ontario, which underlies the entire western portion of the province, west of a line drawn from Georgian Bay to Port Hope on Lake Ontario. Most of this Trenton drilling, however, has been confined to the vicinity of the old gas and oil fields, and carried on by the large gas companies, or allied interests.

Till 1923, though oil and gas indications have been met in the Trenton limestone in many parts of the province, the only production of real commercial importance in this formation in Ontario was in the deep oil and gas field of Dover Township, Kent County. Exhaustive drilling indicates that this field is restricted to an exceedingly small area; and no additional work was done there in 1923.

Outside this area, however, Eugene Coste & Co., Ltd. took a prominent part in Trenton drilling. This company drilled one test in Essex County, two in Kent County, Romney Township, and one in Dawn Township, Lambton County. None of these Trenton tests secured production. However, in Romney Township, the Glenwood Natural Gas Co., a Doherty subsidiary, drilling on the Hugh Shanks farm west of Port Alma, late in the year encountered oil in the bottom 10 feet of the Trenton limestone. For a time the well flowed by heads, and later caved; delays have been experienced in getting it in shape for steady production but at the moment of writing the estimate of 200 bbls. a day has not been confirmed by an actual capacity test.

The Glenwood-Shanks was one of two deep tests undertaken in proximity to the old Tilbury gas field. The other, Union Natural Gas Co., 248 Truckenbrod, has been carried to the top of the Trenton limestone. It is about 31 miles east of the Glenwood Shanks. To the north, almost on a line between the Glenwood-Shanks and the Dover deep production, the Union Natural Gas Co. is down 1,400 feet with a deep test on the Mancell farm, Tilbury East Township, while at a point nearer Tilbury Eugene Coste & Co. have located another deep test. All these tests are to be carried to the granite; and if only one of them secures commercial production in the Trenton formation, it will indicate an important new field and stimulate further drilling in 1924.

As things now stand, the area surrounding the Glenwood-Shanks will almost certainly see six deep tests drilling in 1924; but production in the new wells now under way will result in additional work.

In Essex County, the Eagle Oil & Gas Co. of Toronto got the top of the Trenton limestone at an exceptionally high point in a test near Arner; but had to abandon work early in the year owing to casing trouble. Further work may be done at this point. In the northeast corner of Lambton County, High Pressure Oil & Gas Co. of Petrolia is down 2,200 feet with a Trenton test near Arkona.

Outside these deep tests, drilling for gas has been carried on in several areas. In Elgin County the Dominion Natural Gas Co. has got production in two wells at Lakeview; in Essex, Bon Jasperson has drilled five small gassers, about 50,000 feet each, near Kingsville, tapping the old Essex gas sand at 1,000 feet. In Kent County the Glenwood Natural Gas Co. got some production around 1,400 feet in an area west of Port Alma, not far from the Glenwood Shanks deep test; the three wells aggregating 2,200,000 feet a day. Efforts to extend the Clinton gas field in Dawn Township, Lambton County, have been unsuccessful; as was a wildcat test drilled by Coste & Co. for gas in Moore Township.

In shallow oil, practically the only activity was a little drilling in Lambton County, near the Warwick-Plympton Township line, with slight results. A few wildcat tests in other parts of Ontario failed to secure commercial production, though one or two of these are still unfinished.

Western Operations

Operations in the Canadian West have been more extensive, drilling having been carried on at isolated points all the way from the international boundary to the Arctic Circle.

An important factor in the development work in the Canadian West in recent years has been the systematic campaign launched by Imperial Oil, Ltd., of Toronto in 1919. On the basis of exhaustive geological surveys conducted by the company's own corps of experts, tests were located at various points which gave promise of commercial oil production. So far these tests have been resultless in developing commercial oil, though gas in commercial quantities has been secured in three fields.

With the close of 1923, Imperial Oil, Ltd., abandoned its winter camp in the Fort Norman district, on the Mackenzie. So far, production in this field is restricted to the discovery well, which, deepened to 951 feet, yields 70 barrels a day. Two tests drilled on locations in two different directions from the discovery well, and carried to below 2,000 feet, have failed to secure production, clearly limiting the possibilities in these directions and indicating that the structure is much less extensive than had been believed. Next season Imperial Oil, Ltd., will send a crew to Fort Norman to either deepen the discovery well or begin a systematic process of "working from the known to the unknown" by starting a new test on a location nearby. Under present conditions the field with a much larger production would not be a commercial proposition; but Imperial Oil, Ltd., apparently intends to develop it as a potential oil reserve which may be of value in the distant future.

No other companies drilled in the northwest territories in 1923.

In Alberta, Imperial Oil, Ltd., in its campaign undertook considerable development work in the foothill belt, parallel to the Rocky Mountains, where several areas indicated promising structures. Of these areas, one at Twin Butte, the scene of two exceptionally deep tests, was abandoned before 1923. Early in 1923 the foothills area about Willow Creek, west of Nanton, was also abandoned. North of Calgary, a test in the foothills at Coalspur was inconclusive, drilling difficulties forcing abandonment of the well at comparatively shallow depth. A new test will be started in this area in 1924. Farther north, a test on the very extensive structure at Pouce Coupe yielded about 10,000,000 of gas per day; but though carried some distance below the gas horizon, no traces of oil were encountered. This area is definitely a gas field; and owing to absence of markets, the gas is valueless except as a carbon black proposition.

Gas Developed in Okotoks Field

The only area in the foothill belt which has given commercial results is the Okotoks Field, southwest of Calgary, the scene of the Calgary boom of 1913-14. Here Imperial Oil, Ltd. operates through a subsidiary, the Royalite Oil Co., which has taken over the Dingman properties and interests. Two new gassers were completed in 1923, making four in all, the additional gas production secured aggregating 11,000,000 feet a day, open flow; this gas is handled in the company's gasoline absorption plant, the dry gas being sold to the Canadian Western Natural Gas Co. for distribution. The Royalite Oil Co. will either deepen the present wells or undertake new drilling in 1924.

In the same field the Illinois-Alberta Oil & Refining Co. early in 1923 secured a gas production of over 3,000,000 feet a day in its No. 1 well; but no additional drilling has been carried on by this company. Other local companies with some small proven production have been entirely inactive so far as new drilling is concerned.

Tests in the Prairie Country

Turning to the so-called prairie fields, east of the foothills, the most important, and in fact the only oil indications encountered in 1923 were in British Petroleum's, Ltd. No. 2, near Wainwright, in east central Alberta. This test, drilled in the expectation of securing oil in the Dakota sand, encountered a flow of heavy oil at a higher point, in the bottom of the Benton shale. The oil is a heavy asphaltic product, with a relatively small gasoline and kerosene content. The well has been capped till next spring, and no exhaustive capacity test has confirmed the estimated production of 200 barrels a day. A previous test by British Petroleum, Ltd. secured a considerable gas production. Drilling in previous years has indicated an extensive gas field in the Irma-Wainwright area, supposedly related to the Viking Field near Edmonton, and the Irma-Wainwright gas field may be now regarded as fairly proven, though Imperial Oil, Ltd. finished its Gratton No. 2 test in this area without getting either oil or gas.

The British Petroleum's strike, though in itself perhaps not of large commercial importance, is regarded in many quarters as indicating larger possibilities for oil in this area; and has stimulated drilling activity to a marked degree. Practically all available territory is under lease; and from a dozen to a score of tests will likely be drilling in 1924, including three or four uncompleted tests. Two of these are near Monitor, where the

(Continued on Page 173)

ROCKY MOUNTAIN REGION EXPECTS VERY ACTIVE AND EXTENSIVE WORK

By Max W. Ball
(President, Marine Oil Co.)

Max W. Ball

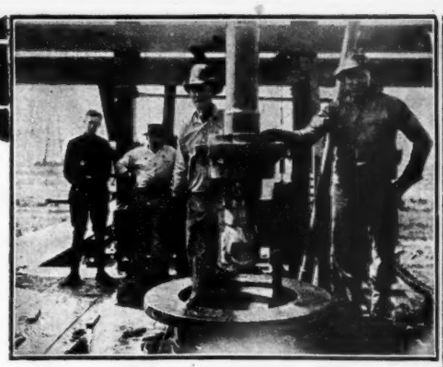
The Rocky Mountain region is looking forward to a very active season. The new year brings with it a feeling of optimism, both among oil geologists and oil operators, and it is expected that the oil companies, both large and small, will be more active than ever as soon as weather conditions permit of extensive field work. No doubt the other regions are experiencing the same general reaction from the recent overproduction and the consequent low prices of crude.

As president of the American Association of Petroleum Geologists I do not feel that I can let this occasion pass without extending to all oil geologists and oil company executives an invitation to attend the annual meeting of the association at Houston, March 27-30, 1924, which promises to be very interesting and instructive to executives as well as geologists.

REED ROLLER BIT COMPANY "The Bit with the Bite"

Leaves no junk in the hole

Reed Bits Conquer All Hard Rock Formations With Ease



Yount-Lee well High Island (Texas) Field. This crew ran a Reed Bit through 400 feet of hard rock without a drop of oil, using slush instead.

H. L. RUDOLPH, Driller with Dauchy & Bryant, Contractors, in Luling Field, who likes his work better since using slush lubrication in operation of Reed Bits.

A strange story found its way to us from out West. An oil writer of prominence is authority for the statement that 180 fish tail bits were used up on one well. It happened that it was in a territory where operators were just changing from cable to rotary and had not the time nor convenience to obtain the most efficient bit for the purpose—the Reed Roller Bit. What a saving it would have been had they used a Reed Bit? And think of the time pulling in and out of the hole to change these 180 fish tails.

Reed Roller Bits and Reamers are now in a general sense regarded as "standard equipment" in all rotary fields where the rock problems exist.

Run 'em Without Oil

Over a year ago, drillers proved that a Reed Roller Bit could be run without a drop of oil, using slush pumped through the bearings instead. This eliminated continuous coming in and out of the hole to refill oil lubricators and make connections (involving considerable risk of losing the hole.)

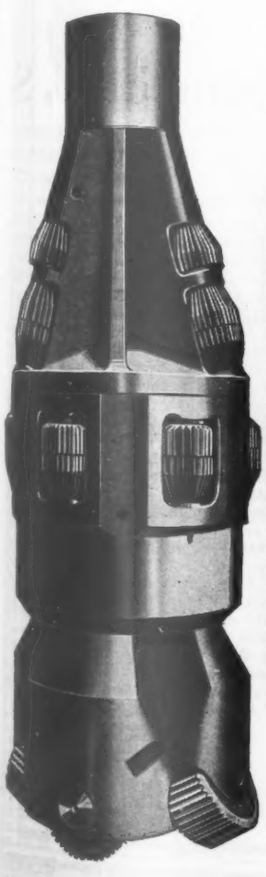
"SLUSH LUBRICATION" has become a fixed success in the oil industry. Up to the present OVER ONE MILLION DOLLARS worth of Reed bits, reamers and cutters have been sold to run with SLUSH ONLY for lubrication.

Hardeman No. 2, Luling (Tex.) Field. Run a Reed Bit 131 feet with only one pull-out, account of formation.

Heretofore, oil would hold sand in the bearings, grinding them out, while slush pumped full force keeps bearing surface free of grit and easy rolling.

If you are not getting results of this kind from other type rock bits, and you want some real facts, write us at once. We have a special booklet of the Slush Lubrication idea, containing actual facts in the way of sworn testimony that is yours on request.

Well at High Island (Texas) Field, made by this crew with Reed Rock Bit using slush lubrication.



First from left—G. O. Nokes, tool pusher; Second from left, F. E. Blythe, head driller of night crew. Luling crew that made good records with Reed Bit, using slush for lubrication.

"REED SERVICE MEANS NOW"

Reed Roller Bit Co.

Houston, Texas, U.S.A.

CALIFORNIA OFFICE: 1341 Santa Fe Ave., Los Angeles
Phone 882785. Ask for Mr. E. B. Wiggins

KANSAS PRODUCTION SMALLEST IN 7 YEARS

(Continued from Page 80)

Anderson	980	30,380
Lyon	89	2,759
Bourbon	151	4,681
Linn	398	12,338
Labette	65	2,015
Fuel oil	3,750	116,250
Total	85,125	2,638,875
Same period 1922	84,184	2,609,974
Increase	941	28,901

February

Marion	10,222	286,216
Butler	43,187	1,209,236
Greenwood-Woodson	14,806	414,568
Cowley	1,054	29,512
Chautauqua	2,742	76,776
Elk	632	17,696
Montgomery	2,110	59,080
Wilson	322	9,016
Allen	1,570	43,960
Neosho	980	27,740
Miami	635	17,780
Franklin	628	17,584
Anderson	975	27,300
Lyon	80	2,240
Bourbon	150	4,200
Linn	388	10,864
Labette	65	1,820
Fuel oil	3,750	105,000
Total	84,296	2,360,288
Same period 1922	84,621	2,369,388
Decrease	325	9,100

March

Marion	9,691	300,421
Butler	42,191	1,307,921
Greenwood-Woodson	15,703	486,793
Cowley	1,055	32,705
Chautauqua	2,750	85,250
Elk	635	19,685
Montgomery	2,115	65,565
Wilson	325	10,075
Allen	852	26,443
Neosho	981	30,411
Miami	625	19,375
Franklin	656	20,336
Anderson	1,300	40,300
Lyon	87	2,697
Bourbon	109	3,370
Linn	413	12,803
Labette	62	1,922
Fuel oil	3,950	122,450
Total	83,501	2,588,531
Same period 1922	85,660	2,655,460
Decrease	2,159	66,929

April

Marion	10,033	300,990
Butler	43,071	1,292,130
Greenwood-Woodson	18,391	551,730
Cowley	1,439	43,170
Chautauqua	2,710	81,300
Elk	631	18,930
Montgomery	2,111	63,330
Wilson	325	9,750
Allen	849	25,470
Neosho	977	29,310
Miami	622	18,660
Franklin	652	19,560
Anderson	1,210	36,300
Lyon	80	2,400
Bourbon	109	3,270
Linn	411	12,330
Labette	60	1,800
Fuel oil	3,800	114,000
Total	87,481	2,624,430
Same period 1922	89,660	2,689,800
Decrease	2,179	65,370

May

Marion	9,827	304,637
Butler	44,602	1,382,662
Greenwood-Woodson	22,351	692,881
Cowley	1,471	45,601
Chautauqua	2,688	83,328
Elk	625	19,375
Montgomery	2,100	65,100
Wilson	321	9,951
Allen	846	26,226
Neosho	963	29,853
Miami	621	19,251
Franklin	653	20,243
Anderson	1,201	37,231
Lyon	70	2,170
Bourbon	107	3,317
Linn	403	12,493
Labette	58	1,798
Fuel oil	3,100	96,100
Total	92,007	2,852,217
Same period 1922	89,490	2,774,190
Increase	2,517	78,027

June

Marion	9,721	291,630
Butler	41,798	1,253,940
Greenwood-Woodson	26,175	785,250
Cowley	1,742	52,260
Chautauqua	2,826	84,780
Elk	762	22,860
Montgomery	2,815	84,450
Wilson	288	8,640
Allen	1,414	42,420
Neosho	1,008	30,240
Miami	610	18,300
Franklin	600	18,000
Anderson	820	24,600
Lyon	77	2,310
Bourbon	131	3,930
Linn	314	9,420
Labette	59	1,770
Fuel oil	2,100	63,000
Total	93,261	2,797,820
Same period 1922	93,525	2,805,750
Decrease	264	7,920

July

Marion	7,653	237,243
Butler	36,795	1,140,645
Greenwood-Woodson	19,096	591,976
Chautauqua	2,838	87,978
Elk	743	23,033
Montgomery	1,927	59,737
Wilson	299	9,269
Cowley	2,075	64,325
Allen	1,783	55,273
Neosho	1,005	31,155
Miami	623	19,313
Franklin	640	19,840
Anderson	957	29,667
Lyon	40	1,240
Bourbon	132	4,092
Linn	321	9,951
Labette	93	1,829
Fuel oil	2,000	62,000
Total	78,986	2,448,566
Same period 1922	89,292	2,768,052
Decrease	10,306	319,486

August

Marion	7,918	245,458
Butler	35,625	1,104,375
Greenwood-Woodson	17,459	541,229
Chautauqua	2,815	87,265
Elk	736	22,816
Montgomery	1,990	61,690
Wilson	291	9,021
Cowley	2,445	75,795
Allen	1,716	53,196
Neosho	1,020	31,620
Miami	616	19,096
Franklin	625	19,375
Anderson	926	28,706
Lyon	40	1,240
Bourbon	127	3,937
Linn	316	9,796
Labette	55	1,705
Total	74,720	2,316,320
Same period 1922	91,840	2,847,840
Decrease	17,120	531,520

September

Marion	8,123	243,690
Butler	34,949	1,048,470
Greenwood-Woodson	18,244	547,320
Chautauqua	2,760	82,800
Elk	612	18,360
Montgomery	1,993	59,790
Wilson	290	8,700
Cowley	2,123	63,690
Allen	1,701	51,030
Neosho	1,010	30,300
Miami	603	18,090
Franklin	621	18,630
Anderson	930	27,900
Lyon	40	1,200
Bourbon	123	3,690
Linn	313	9,390
Labette	56	1,680
Total	74,491	2,234,730
Same period 1922	91,622	2,748,660
Decrease	17,131	513,930

October

Marion	7,760	240,560
Butler	32,927	1,020,737
Greenwood-Woodson	21,527	667,337
Chautauqua	2,762	85,622
Elk	645	19,995
Montgomery	1,997	61,907
Wilson	289	8,959
Cowley	2,059	63,829
Allen	1,710	53,010
Neosho	1,000	31,000
Miami	610	18,910
Franklin	616	19,096
Anderson	937	29,047
Lyon	38	1,178
Bourbon	125	3,875
Linn	310	9,610
Labette	54	1,674
Total	75,366	2,336,346
Same period 1922	91,181	2,826,611
Decrease	15,815	490,265

November

Marion	7,333	219,990
Butler	32,959	988,770
Greenwood-Woodson	22,101	663,030
Chautauqua	2,775	83,250
Elk	636	19,080
Montgomery	1,988	59,640
Wilson	285	8,550
Cowley	2,109	63,270
Allen	1,696	50,880
Neosho	980	29,400
Miami	600	18,000
Franklin	605	18,150
Anderson	910	27,300
Lyon	38	1,140
Bourbon	124	3,720
Linn	302	9,060
Labette	50	1,500
Harvey	137	4,110
Total	75,628	2,268,840
Same period 1922	88,330	2,649,900
Decrease	12,702	381,060

December

	Daily Av.	Mo.Prod.
Marion	8,115	251,565
Butler	32,642	1,011,902
Greenwood-Woodson	21,536	667,616
Chautauqua	2,872	89,032
Elk	740	22,940
Montgomery	1,912	59,272
Wilson	272	8,432
Cowley	1,901	58,931
Allen	982	30,442
Neosho	991	30,721
Miami	646	20,026
Franklin	601	18,631
Anderson	1,710	53,010
Lyon	80	2,480
Bourbon	145	4,495
Linn	316	9,796
Labette	54	1,674
Harvey	135	4,185
*Fuel oil	.....	.....
Total 1923	75,650	2,345,150
Total 1922	85,261	2,643,091
Difference	9,611	297,941

*Included in Marion and Butler County production.

Kansas Production by Counties

Marion	3,266,996
Butler	14,221,115
Greenwood-Woodson	6,938,702
Chautauqua	1,012,631
Elk	244,919
Montgomery	765,126
Wilson	110,438
Cowley	629,513
Allen	506,896
Neosho	362,161
Miami	226,517
Franklin	229,596
Anderson	391,741
Lyon	23,054
Bourbon	48,536
Linn	121,651
Labette	21,107
Harvey	4,291
Fuel oil	675,000
Total 1923	29,812,122
Total 1922	32,887,644
Difference	2,075,522

Production by Months

January	2,638,875
February	2,360,288
March	2,588,531
April	2,624,430
May	2,852,217
June	2,797,820
July	2,448,566
August	2,316,320
September	2,234,730
October	2,336,346
November	2,268,840
December	2,345,150
Total 1923	29,812,122
Total 1922	32,887,644
Difference	2,075,522

Production From 1889 to 1922, Inclusive

Year	Bbls.
1889	500
1890	1,200
1891	1,000
1892	5,000
1893	15,000
1894	40,000
1895	44,450
1896	110,571
1897	81,000
1898	70,000
1899	87,870
1900	74,644
1901	179,151
1902	331,749
1903	932,214
1904	4,256,779
1905	3,450,779
1906	3,100,065
1907	2,409,521
1908	1,802,323
1909	1,253,704
1910	1,188,660
1911	1,270,833
1912	1,592,736
1913	2,375,342
1914	4,350,540
1915	4,000,333
1916	13,942,000
1917	37,986,669
1918	43,353,410
1919	39,681,972
1920	35,446,627
1921	35,749,265
1922	32,887,644
1923	29,812,122
Total	290,241,392

Say you saw it in The Oil and Gas Journal.

Probable Production of Petroleum in U. S.

(Continued from Page 39)

that the San Joaquin Valley fields will hold about steady in 1924 and that the increase from Torrance, Compton and Redondo Beach will balance the decline from Signal Hill, Huntington Beach and Santa Fe Springs, we could figure California in 1924 at around 700,000 bbls. a day or 250,000,000 for the year. If the new fields are prolific and quickly developed the production might run over this figure, and if the new fields are not prolific and are slowly developed the production for 1924 will probably fall well below the above figure. In studying California's "production curve" for the last 20 years and noting how it shot almost straight upwards in 1923, and then comparing her curve with the curves of the other seven producing areas one can hardly believe that it is possible for California's curve to run horizontal in 1924. In the light of the history of all other oil fields it is much easier to believe that California's curve will drop very sharply in 1924, and then slowly "flatten out."

Rocky Mountain Factor

Wyoming is the real producer in the Rocky Mountain area, with Montana bulking large in the background and Colorado more than promising of some new oil fields in 1924. The Rocky Mountain area had produced about 132,000,000 bbls. of oil up to the end of 1922, of which 93,000,000 bbls., or 71 per cent, had been produced in the five years from January 1, 1918, to December 31, 1922. Of this total production Montana supplied about 4,500,000 bbls., Wyoming 115,600,000, and Colorado 11,750,000.

The Rocky Mountain area produced over 40,000,000 bbls. of oil in 1923, or more than all of the States east of the Mississippi River. The production today is running around 125,000 bbls. a day, or at the rate of 45,000,000 bbls. a year. The heart of the Rocky Mountain area is the Salt Creek Field, and it is going "on the pump" in the very near future. On the other hand, during 1924, the Sinclair pipe line will be completed from Teapot Dome to Freeman, Mo., where it joins the main trunk line from the Mid-Continent to East Chicago. This pipe line will make it possible to "open up" Salt Creek, and if the production holds around 150,000 bbls. a day for 1924 we can safely credit the Rocky Mountain area with something like 55,000,000 bbls. for 1924.

The accompanying tabulation of the eight great producing areas for the five year period 1919-1923, affords some background and vantage point from which to look into the year 1924.

You will note that the total estimate for the eight fields for 1924 is 675,000,000 bbls. In 1923 we produced about 721,000,000 bbls., or 46,000,000 more than the estimate for 1924. As the fields of the United States are producing today at the rate of less than 700,000,000 bbls. a year we will have to bring in enough new production in 1924 to offset the decline in the old fields, and especially the fields that came in in 1922-1923, and in addition bring in the equivalent of about a 50,000,000-bbl.-a-year field, if the 1924 production is to equal 1923. Present indications are that 700,000,000 bbls. in 1924 would be a very optimistic estimate.

The industries of the United States are today operating on a basis that will require the products from about this quantity of crude oil. With one month of the year 1924 gone by, it doesn't look as if we would produce over 700,000,000 bbls. in 1924, and it is very easily conceivable that we might produce very substantially less than that amount. We are today rapidly completing the absorption of the overproduction of 1923, and nothing but too many new large fields can keep 1924 from being a good year for the oil industry, and several new large fields are not definitely in sight today.

Area—	1919	1920	1921	1922	1923	Daily Prod. Jan., 1924	Estimate for 1924
East	47,000,000	44,000,000	44,000,000	42,000,000	40,000,000	110,000	40,000,000
Kansas	30,000,000	35,000,000	36,000,000	32,000,000	31,000,000	70,000	30,000,000
Oklahoma	86,000,000	108,000,000	116,000,000	148,000,000	162,000,000	360,000	140,000,000
Texas	94,000,000	104,000,000	111,000,000	121,000,000	125,000,000	333,000	100,000,000
Arkansas	.....	.....	11,000,000	16,000,000	34,000,000	100,000	40,000,000
Louisiana	17,000,000	27,000,000	26,000,000	35,000,000	24,000,000	50,000	20,000,000
California	101,000,000	176,000,000	115,000,000	140,000,000	262,000,000	700,000	250,000,000
Rocky Mountain	13,000,000	17,000,000	22,000,000	27,000,000	43,000,000	125,000	55,000,000
Totals	388,000,000	451,000,000	481,000,000	561,000,000	721,000,000	1,848,000	675,000,000

A TIGHT BONNET JOINT

is Built into the READING STEEL VALVE

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Reduced Wear

These are treated separately in other advertisements of this series, and collectively in an interesting booklet which will be sent on request

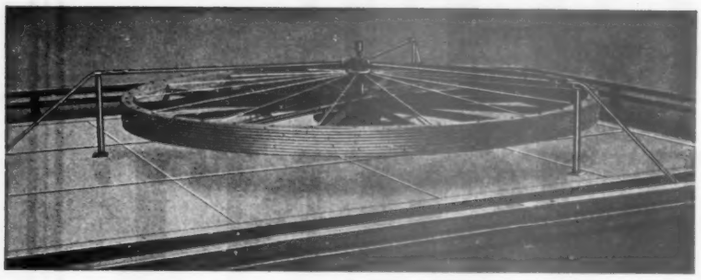
A VALVE, like the line of which it is a part must have few joints, and they must be tight. The Reading valve has no joint between the bonnet and yoke as they are cast integrally. The joint between the body and bonnet is a ground joint so made that the gasket may be omitted and gasket failures at high temperatures avoided. It is held tight with heat treated alloy steel bolts with a nut screwed on each end.

READING CAST STEEL VALVES AND FITTINGS

THE steel castings for valve parts and fittings require a specialized foundry practice to elminate particularly porosity and gas bubbles. The Reading foundry practice is a development of over ten years specialization in this class of work. Reading cast steel fittings are manufactured for heavy duty services in which temperatures and pressures are high.

READING STEEL CASTING CO.
INCORPORATED
Reading Valve and Fittings Division
An Associate Company of the American Chain Company, Inc.
929 Connecticut Ave., Bridgeport, Conn.

Boston, Charlotte, Chicago, Cleveland, Detroit, Hartford, Houston, New York, Philadelphia, Pittsburgh, San Francisco, St. Paul, Rochester



Durnell Talks on Standardization of Pumping Powers

Being the Tenth of a Series

H. G. Durnell

EFFICIENT

The EFFICIENCY of any piece of machinery depends on its ability to function at all times and to do its work without the use of unnecessary power.

WORKMANSHIP

Being made of good materials with expert workmanship eliminates breakage and reduces time-out for repairs to a minimum. A thorough system of lubrication insures against loss of time because of hot or burned-out bearings and its attendant troubles. The whole machine, designed to handle its work capably without sacrificing strength or durability, insures the user efficient operation and economical cost of operation.

DURNELL ABLE

The Durnell Underpull Pumping Power is a monument to efficiency, proclaimed such by thousands of satisfied producers.

INTERNATIONAL SUPPLY COMPANY

Exclusive Agents. Stocked at

OKLAHOMA		KANSAS	WYOMING
Okemah	Jennings	El Dorado	Casper
Bristow	Shidler	Virgil	
Okmulgee	Tonkawa	Madison	
Bryant	Bartlesville		
Wewoka	Pawhuska		MONTANA
	Drumright		Sunburst

MANUFACTURED BY

UNION MACHINE COMPANY

BARTLESVILLE, OKLA.

OPERATIONS IN EASTERN FIELD DULL IN 1923

(Continued from Page 92)

the Eastern fields, after market conditions have improved to such an extent as to warrant starting operations. In some sections of the old fields there is still room for a vast amount of new work. The superiority of the Pennsylvania grade of crude will continue to give it prestige over all others.

New Producing Territory Scarce

No new pools or fields of appreciable dimensions have been found in the East in a good many years, except the small Queen sand pool near Tidioute, two years ago. Moreover, the most daring wildcatter is at a loss to know where to look for strictly new producing territory. From year to year efforts have been made along that line and the only information gained was that a producing formation did not exist at the locations drilled. The only section not thoroughly tested lies in some of the lower counties in West Virginia. In quite a number of these counties numerous test wells have been completed from time to time and proved failures so far as the discovery of oil is concerned. The only known oil producing territory in these lower counties is the Pure Oil Co.'s holdings, partly developed, in Cabin Creek district, Kanawha County and Sherman district, Boone County. Owing to the undeveloped acreage this company has some years before the last location has been drilled.

Trying for Deeper Producing Sands

While some of the larger operating companies are still trying to find a deeper producing formation than heretofore known, no deep wells were completed during the year. At the close of the year there were five of these deep tests drilling. Three of them have reached a very great depth and two just started. Near Ligonier, Westmoreland County, Pennsylvania, the Peoples Natural Gas Co. has reached a depth of 6,200 feet on the Seger Brothers' farm and making slow progress on account of a crooked hole. In the same locality, the same company is down 6,275 feet at a second test on the Booth-Flinn property and fishing for a string of tools. They are hoping to recover the lost string. On Laurel Ridge, 8 miles southwest of Johnstown, the American Research Development Co., composed principally of Johnstown men, has started to drill a deep test. They expect to drill this well to the same formation in which the Peoples Gas Co. got a good flow of gas in its first test near Ligonier.

Two deep tests are drilling in West Virginia, both owned by the Hope Construction & Refining Co. One is located on the Volcanic tract, in Walker district, Wood County. It has reached a depth of 5,290 feet and is still drilling. Nothing has been found in this well except a light show of gas, 5,000 feet a day, in a shale formation below the level at which the Oriskany sand should have been encountered.

Deepest of All Wells Planned

The Hope company has started to drill what is proposed to be a very deep well on the Joseph Gordon farm, near Terra Alta, in Portland district, Preston County. Barring accidents, this well will be drilled deeper than any other in the history of the industry. The rig and machinery installed at this test will make it possible to go to a greater depth than any other well ever drilled in this or any other county. The well on the Lake farm, in Marion County, holds the record for deep drilling, 7,579 feet. The figures furnished by the company show what precautions have been taken to insure drilling to a great depth. The derrick is 24 feet square at the base and 94 feet high and a "crows' nest" 14 feet square at the top. Forty-nine thousand feet of lumber was used in its construction. For the base on which it rests, 150 bags of cement, 30 tons of gravel and sand and 15 tons of stone were put down. The shaft of the bull wheel is 24 inches in diameter and with three grooves. The bandwheel is 12 feet in diameter, with four grooves and steel hub. The Parkersburg Rig & Reel Co. furnished the chain drive and sand wheel. No definite time has been set for the completion of this well, neither has the company fixed a depth to which it will be drilled. Unless stopped by an accident it will be drilled to a greater depth than any other well.

Rugged Country

The location of the well is in a very rugged section of the State, almost mountainous. The view from the lookout on the top of the derrick is said to be very fine, showing the contour of the country in every direction, as far as the eye can carry. When the well will be finished or reach the depth to which it is physically possible to drill cannot be determined. If all goes well and no unavoidable delays, they expect to get a record depth before the close of the year. On January 1 the well was drilling at about 500 feet, only a fair start on what is to be a long journey toward the earth's center.

Southeastern Ohio

The distinction of having furnished more new production each month of the year, except February, over West Virginia and southwest Pennsylvania, belongs to southeastern Ohio. By the conclusion of developments at the end of every month but the one noted, the deep or Clinton sand territory completed enough good producers to hold first place. The work of the year was confined almost exclusively to the old districts, no new pools having been discovered. In midsummer, what is now regarded as an extension, was found in Holmes County. A few very good producers were completed but the low market discouraged an active drilling campaign. When conditions are favorable this territory will receive attention. The most promising territory is held by the larger operating companies and they will not push development work at this time.

The shallow sand district had considerable new work under way at all times but completed no large wells. The average size of the wells in the shallow territory was much smaller than in West Virginia. In Morgan County, there is a little development that has furnished a few Berea grit wells of better than the average size. It is quite likely that the deep sand territory will continue to furnish the major portion of new production for some time to come. Owing to the average depth of the wells more than 3,000 feet, it is the most expensive to operate of any in the Eastern fields.

Southwest Pennsylvania

The dullness that prevailed in the southwest Pennsylvania fields throughout the year was unprecedented. The new production amounted to less than 1,000 bbls. The only section to show any activity was in Greene County, due to the gas companies trying for an increase in production. At the close of the year there was not a well drilling in Beaver County. Owing to the intense drilling the southwest counties have been subjected to in past years there is scarcely a chance for discovering a new pool.

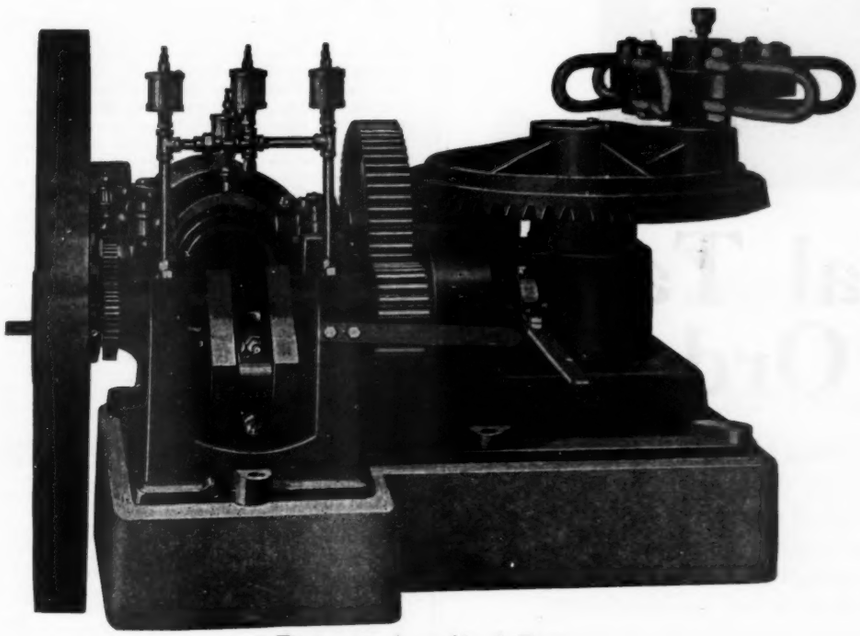
No Large Sales of Producing Properties

No deals in producing properties of any considerable magnitude were consummated in Eastern fields during the year. The price asked for the little offered was considered too high by those who showed an inclination to invest. Owners realized that to part with their holdings it would not be possible, as was the case some years ago, to develop new production. Now that the upward turn has come they are less inclined to sell than when the market was low. So far as known there is no property on the market at the present time. At the beginning of the new year producers and operators were very optimistic as to the future prosperity of the industry. All agree that the discovery of new and prolific producing fields alone can retard the advance.

Completions of the Year

The three divisions, southwest Pennsylvania, West Virginia and southeastern Ohio completed fewer wells and furnished less new production in 1923 than in the preceding year. The appended table shows the completions, new production,

New Type Combination Geared Power



Patent Applied For

Manufactured in Two Sizes

With 8 H.P. and 12 H.P. Four-Cycle Gas Engine

Equipped with magneto ignition, far superior to old style combination power that requires swings to hook on wells. Eight H. P. will handle six 1,000-foot wells, when balanced. Weight 2,100 lbs. 12 H. P. will handle ten 1,000-foot wells, when balanced. Weight 4,300 lbs. These units are self contained and can be set on wood or concrete foundations.

THE PATTIN BROTHERS COMPANY

Main Office and Works: Marietta, Ohio

Branch Warehouse and Office:
Tulsa, Okla., Wichita Falls, Texas

Carried in Stock By Frick & Lindsay Co., in Kentucky

MADE OF KEYSTONE COPPER STEEL

Special Tanks to Order

The Maloney Tank Manufacturing Company is adequately equipped to manufacture special sizes of storage or flow tanks of bolted construction. These are built to purchaser's specifications and follow the same construction as our standard tanks, possessing our patented offset seams and joints which give a gas-tight fit of parts with gasketing only, without calking, and being made of Keystone Copper Steel, the most highly rust-resisting steel known.

The Flow Tank illustrated above is one manufactured for use in the California district. It is of 1500-Bbl. capacity.

Maloney materials, design and workmanship are unsurpassed. Allow us to quote on your requirements.

MALONEY TANK MANUFACTURING CO.
Offices and Factory: Tulsa, U. S. A.

60 Bbls. to 3,000 Bbls., Inclusive

Prompt, Dependable Export Service

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MALONEY
MALONEY

dry holes and gas wells by months for the year just closed:

	Comp.	Prod.	Dry	Gas
January	226	1,435	47	67
February	182	900	52	51
March	166	777	35	52
April	208	1,113	40	64
May	222	1,324	43	47
June	228	779	62	53
July	224	977	65	65
August	228	1,282	46	70
September	170	936	35	50
October	199	980	34	76
November	205	1,158	46	80
December	170	499	37	74
Total 1923	2,428	12,160	542	749
Total 1922	2,545	15,298	659	528
Difference	117	3,138	117	221

There were 15 changes in the crude market for Pennsylvania grade during the year. The highest posted was $4 a bbl. on February 15, and the lowest on July 13, $2.35. Three advances in December brought the quotations for the regular Pennsylvania grade up to $3 at the close of the year.

The collapse of the Tidioute Queen sand oil field was the feature of operations in the New York State and Northwestern Pennsylvania district during the past year. Production declined there fast and drilling operations at the close of the year were almost a minus quantity. From the start of the year the large wells which were a feature of the 1922 operations in the Tidioute Field were missing and there was no incentive for extensive work. The gas wells there were connected up to the company lines during the latter part of the year and they also failed to come up to expectations turning less than 1,000,000 feet a day into the lines.

Low prices and the absence of any territory which would attract operators, kept down the activity throughout the fields south of McKean County and at the close of the year the amount of drilling under way was at the lowest ebb in years.

The flood territory in the Allegany and the Bradford districts showed up well during the year and the new production there was above that of the previous year.

Notwithstanding the Bradford Field reached its peak in 1881, when the total production for the year exceeded the 23,000,000-bbl. mark, there were more completions in that pool last year than in any other pool in the United States, and more completions in McKean County, in the Bradford and a part of the so-called Middle Field, than in any other county in any American oil producing State. There were 853 completions in the Bradford Field alone and a sufficient number of completions in that part of the county included in the Middle Field to bring the total above that of the busiest oil producing county in Oklahoma.

EASTERN FIELDS

Summary of 1923 Field Operations

Field—	Comp.	Prod.	Dry	Gas
Allegany	272	896	3	4
Bradford	853	2,224	8	3
Middle Field	259	1,788	27	11
Venango-Clarion	516	660	42	53
Butler-Armstrong	200	332	55	30
Southwest Penn.	322	935	85	142
West Virginia	1,129	4,084	222	503
Southeast Ohio	977	7,141	269	104
Total	4,528	18,060	711	850

Completions by Months

	Comp.	Prod.	Dry	Gas
January	387	2,103	57	75
February	304	1,285	65	56
March	319	1,409	46	55
April	394	1,574	55	78
May	461	2,040	71	56
June	463	1,309	73	63
July	449	1,518	85	72
August	422	1,815	53	79
September	338	1,336	44	62
October	354	1,390	65	81
November	355	1,543	56	84
December	282	738	41	89
Total, 1923	4,528	18,060	711	850
Total, 1922	4,917	27,236	822	639
Difference	389	9,176	111	211

NEW KENTUCKY POOLS; WILDCATTING DECLINES

(Continued from Page 92)

will go forward with increased momentum in the spring, as the producing pools are widely separated with plenty of untested territory to drill in between.

Operators in the Owensboro district are more than satisfied with the past year's progress. There are 13 rigs up in spite of the bad weather and of course there will be more when winter is over.

Warren County will continue to extend and broaden production on the big Davenport structure. It will probably be continued into Simpson County on the south and Edmonson County on the north during the new year. The Central Producing & Refining Co. is now running oil from eastern Warren County, interest has revived in that section and new work is starting. In the older sections of Warren and Allen Counties, advances in crude prices will encourage drilling of additional wells on producing leases, few of which are drilled up.

In conclusion we may say that the good things of 1923 came late in the year and point to one of the most active years in 1924 that the field has seen.

Tennessee Review

During the year 54 wells were completed in Tennessee. Of these 12 were reported to produce oil. These producers are all located along the Tennessee-Kentucky line and are extensions of known pools in Kentucky.

In Clay and Pickett Counties attempts were made to extend the Cumberland-Monroe field into Tennessee. This resulted in a good well at Willow Grove in Clay County and one at Celina in the same county and another in northwestern Pickett County, near Byrdstown. Nine wells are now drilling in Clay County.

In Sumner County, a fair well was brought in near Shakle Island and other tests just south of the State line indicate that the Allen County, Kentucky, sands may extend into Tennessee.

The greatest interest in Tennessee is in the Mississippi Embayment area in the southwestern part of the State, where the formations and structures are similar to those in northern Louisiana and southern Arkansas, and where it is thought big production, if any, would be obtained. In this section the following counties are being tested: Madison, Hardeman, Shelby and Fayette. Tests are also being made in Davidson and Maury Counties in the Central Basin, in Benton, Stewart and Cheatham on the Western Highland rim, and Hamilton and Rhea Counties on the Cumberland plateau.

Mississippi-Alabama-Georgia Review

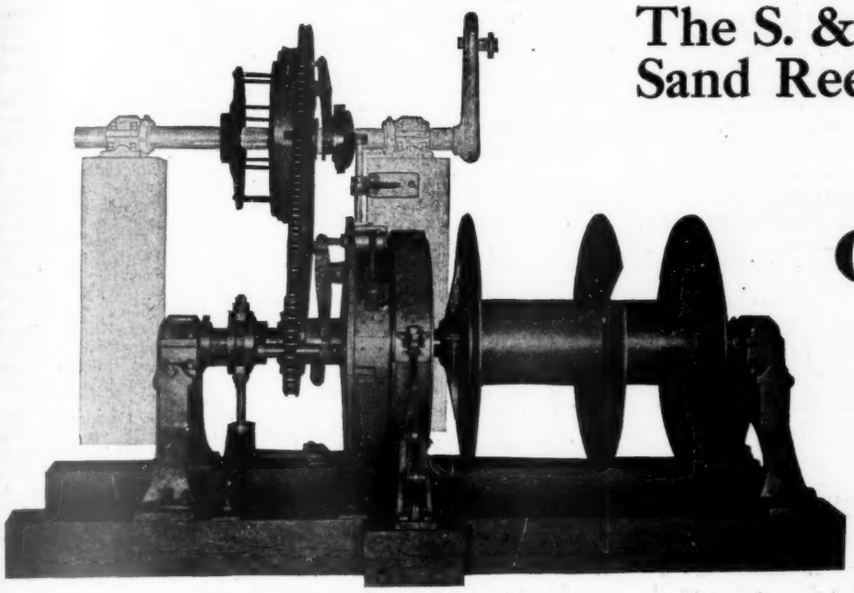
Mississippi, Alabama and Georgia are all in the hope column. Of these States, Mississippi received the most attention during the year. Interest extends into this State from the big oil fields to the west, both along the Gulf Coast and in the northern part of the State. Along the coast, salt dome structures have been sought. In the northern section the Tuscaloosa sand corresponds to the rich Woodbine sands of the northern Louisiana fields. Both areas have been tested during the year. Twelve dry holes and one gas well were reported. Twenty-one rigs were up in the State at the close of the year, of which 14 were shut down and seven drilling. Mississippi offers the best bet of the Gulf Coast States east of the Louisiana fields and during 1924 further tests are planned which may show commercial production.

Alabama holds some promise because formations known to be petroliferous extend into the State and numerous favorable structures are well defined. In the northern part of the State, the Plateau region and Tennessee Valley are near the top of the Cincinnati Arch, and in the Paleozoic sediments of this section are four or five distinct potential oil sands. In the south, along the Gulf Coast, the Cretaceous sands are being tested. During the year the only completion recorded was a duster. There are now 11 rigs in the State, five of which are making hole. Three of these tests are in the northern section, one each in Colbert, Morgan and Madison and two in Clarke County on the Hatchetigbee anticline. One of the latter is now in the Selma chalk at 2,000 feet. It should be carried a few hundred feet farther into the Tuscaloosa formation, where the Woodbine sand may be found.

Georgia seems to be a long shot for oil, nevertheless there are five rigs in

(Continued on Page 156)

Economical Bailing!



Patented December 4, 1923

The S. & B. Chain Driven Sand Reel has done it on

over 125

completed wells, to the satisfaction of many users

Eleven of the biggest producing companies in the Mid-Continent fields have, within the last few months, each purchased from one to ten S. & B. Chain Driven Sand Reels.

Some of the older S. & B. Chain Driven Sand Reels have completed work on as many as eight wells over a service period of two and a half years, and are good for many more wells.

There is no other mechanism made, that will consistently handle any size Bailer, in any depth hole, as easily, as fast, as economically, or with as little wear and tear, and little Fuel and Power consumption, as the S. & B. Chain Driven Sand Reel.

Ask for Bulletin A-11.

Manufactured by

THE OIL COUNTRY SPECIALTIES MFG. CO.

COFFEYVILLE, KANSAS

REFINING AND MARKETING SECTION

FIND BETTER TONE ON ZERO COLD TEST OIL

HOUSTON, Tex., Jan. 28.—There is a better tone throughout the whole of the market on zero cold test oils. Buying is more prompt. Refiners are all in line on present quotations, which are up in a few instances. Stocks are at such a level that nothing approaching a surplus exists.

Last Friday coastal crude oil was raised 15 cents a barrel. While the amount of the advance was less than expected, the change was in keeping with the opinion common among refiners. As yet this 15 cent advance has not come into quotations on refined oils.

From the refiners' viewpoint, the best feature of the market is the lining up of all manufacturers on prices. Ever since the market started its upward trend with the advance of the crude structure, the quotations of some coastal refiners have been lower than the figures commonly given out. A check last week found prices uniform throughout the district.

While no predictions were made, it was the opinion of several sales managers that the last 15-cent advance in crude oil will not be passed along to the finished oil price list at once. For one thing, the advance was not the customary 25-cent step, each one of which has called for a 1-cent advance in lubricating prices. Then there is a feeling that a market that has strength at generally higher prices should not be pushed.

Quicker buying on the part of jobbers is thought to have resulted from the upward trend of the whole oil price structure. Whatever the cause, orders for zero cold test oils are being given on short notice. There seems to be little dickering from one refiner to another in an effort to get fractions of 1 cent taken off quotations.

The higher quotations listed this week run into the higher viscosity oils for summer consumption. This is due to the fact that jobbers are making inquiries for contracts on their oils for the motoring season. It happens that stocks of these oils are at a low ebb in the Coastal area. The exceptional business of the winter months has kept plants turning out products for that season. The heavier oils must now be run in preparation for the coming hot weather demand. In advancing now, these oils are but regaining slight losses of the close of the motoring season of last year.

Both gas oil and fuel oil are moving on a strong market. There is little gas oil along the Houston ship channel. Fuel oil is more plentiful. It is selling in big lots at $1.60. Single car quotations and spot deliveries by tank truck in Houston are going at $1.70 to $1.75 a barrel.

ENLARGED REFINERY WIDENING MARKETS

WICHITA, Kans., Jan. 26.—The Derby Oil Co. of this city, which recently completed a building program at its refinery is now devoting its energies to the enlargement of its marketing facilities. The company has arranged for a chain of stations in southeast Kansas and a string of bulk and service stations across the State of Missouri. The company also plans to extend its service along the Santa Fe Trail. One station is being built at Trinidad, Colo., and another will be built in the near future at Raton, N. M. A bulk station is under construction at Denver, Colo.

Other stations either recently completed or under construction include one at Lincoln, Nebr., one at Des Moines, Iowa, and two at Council Bluffs, Iowa. The company added five to its chain of stations at Kansas City, Mo., last week, through a purchase from the Southern Oil Corp. In this city the company is building probably the most elaborate filing station in this section of Kansas. It is of the community design of glazed tile construction. The station will have nine gasoline pumps and four lubricating oil pumps.

IOWA INDEPENDENTS MEET IN DES MOINES

The annual meeting of the Iowa Independent Oil Men's Association will be held February 14 and 15 at the Fort Des Moines Hotel, Des Moines, Iowa. All details of the program have not yet been completed but the committee in charge assures that it will be the most interesting two-day meeting the association has ever held. The committee is arranging to have two speakers of national prominence who will present the oil producers' and refiners' viewpoint to the jobbers present.

Lieutenant Governor John H. Hammill will deliver the principal address at the banquet which will be held the night of February 14. At the morning session of February 15 an Iowa jobber will speak on "Price Irregularities on the Part of the Resellers." Three members of the association will give their views on the "Cost of Service Station Operation" while another will talk on the subject "The Possibilities of the Domestic Oil Burner." State's Attorney Ben J. Gibson will deliver the final address on the subject "What Does and Does Not Constitute Discrimination."

The afternoon session will be for members only. The annual reports will be heard at this time, with the election of officers for the coming year following.

LEASE BRISTOW REFINERY FROM WILCOX COMPANY

The refinery of the H. F. Wilcox Oil & Gas Co., located at Bristow, Okla., has been leased by the Riley Petroleum Co. of Tulsa. The refinery which has a skimming capacity of approximately 1,500 barrels daily was built and operated by the Wilcox Co., until last summer, when it was shut down due to the unfavorable market situation.

Recently it was announced another concern had secured an option for the lease of the plant. This transaction failed to materialize, resulting in the Riley Petroleum Co. securing the lease. The latter company is headed by J. L. Riley who has been connected with Mid-Continent refining and marketing activities for several years.

KEROSENE CONTRACT FOR CANAL

The Panama Canal has awarded to the Tide Water Oil Co. a contract covering its requirements of 50,000 gallons of kerosene. The contract was awarded on a basis of 14.99 cents per gallon with delivery at Cristobal, Canal Zone.

OIL BUSINESS TO BE GOOD IN 1924 AVOIDING LAST YEAR'S ERRORS

By George N. Moore

President Western Petroleum Refiners Association

The oil industry is made up of a wide awake personnel that is certainly alive to its obligations as well as its opportunities. They have proved themselves in every emergency by providing the petroleum needs of the nation and the world. That they may be counted on in the future as in the past is a foregone conclusion. The oil man leads a most strenuously active life, and must always be keenly alive to the constantly changing conditions of supply and demand as they affect not only his individual business but the industry as a whole.

George N. Moore

It is exceedingly unfortunate that in the endeavor to find and produce sufficient petroleum for national needs the industry is at times severely penalized financially when the unexpected happens and several new and prolific fields are discovered at one time, thus for a temporary period creating an overproduction. We have just passed through such a period and while the financial loss was enormous, the lesson learned should be helpful in the future. 1924 gives every promise of being a reasonably profitable year. The automobile industry, upon which we depend as a consumer for a great part of our product, had a most profitable year in 1923. They have every reason to expect a continuation of that prosperity. Leading business men throughout the country are predicting a good year for general business, and with general business good, the oil business will be good, providing, of course, we do not repeat the costly errors of last year.

OIL MARKETING BRIEFS FROM CHICAGO FIELD

CHICAGO, Jan. 26.—Increased activities and the addition of several new members to the firm necessitated the enlargement of the office space of the Spencer Petroleum Co. in Chicago. As a result the suite at 1333 Peoples' Gas Building, was secured and connected to the suite at 1331, which the company already occupied.

The Advance Petroleum Co., Chicago, has been appointed agent for the products of the Sterling Refining Co., Wichita, recently placed in the hands of a receiver.

Walter J. Herr of the Taxman Refining Co. has been put in charge of Chicago sales of lubricating oils from the new warehouse of the company in that city. The trade name "Tareco" has been adopted for barrel and package goods of the company in local distribution.

W. C. Gibson, Chicago manager for the St. Louis Pump Co., is recovering from an operation.

The Excello Corporation, Chicago, has secured the rights to the distribution of Aero-Gas, an antiknock motor fluid, and will start distribution in all parts of the United States at once. An entire tank car of gasoline may be treated at once, necessitating 10 gallons of the antiknock fluid to the 8,000-gallon car of motor fuel. A number of tests have been made, indicating success in preventing knocking of the engine and cutting down deposition of carbon on spark plugs and cylinder walls.

NORTHWEST JOBBERS BOOST MONTANA CRUDE

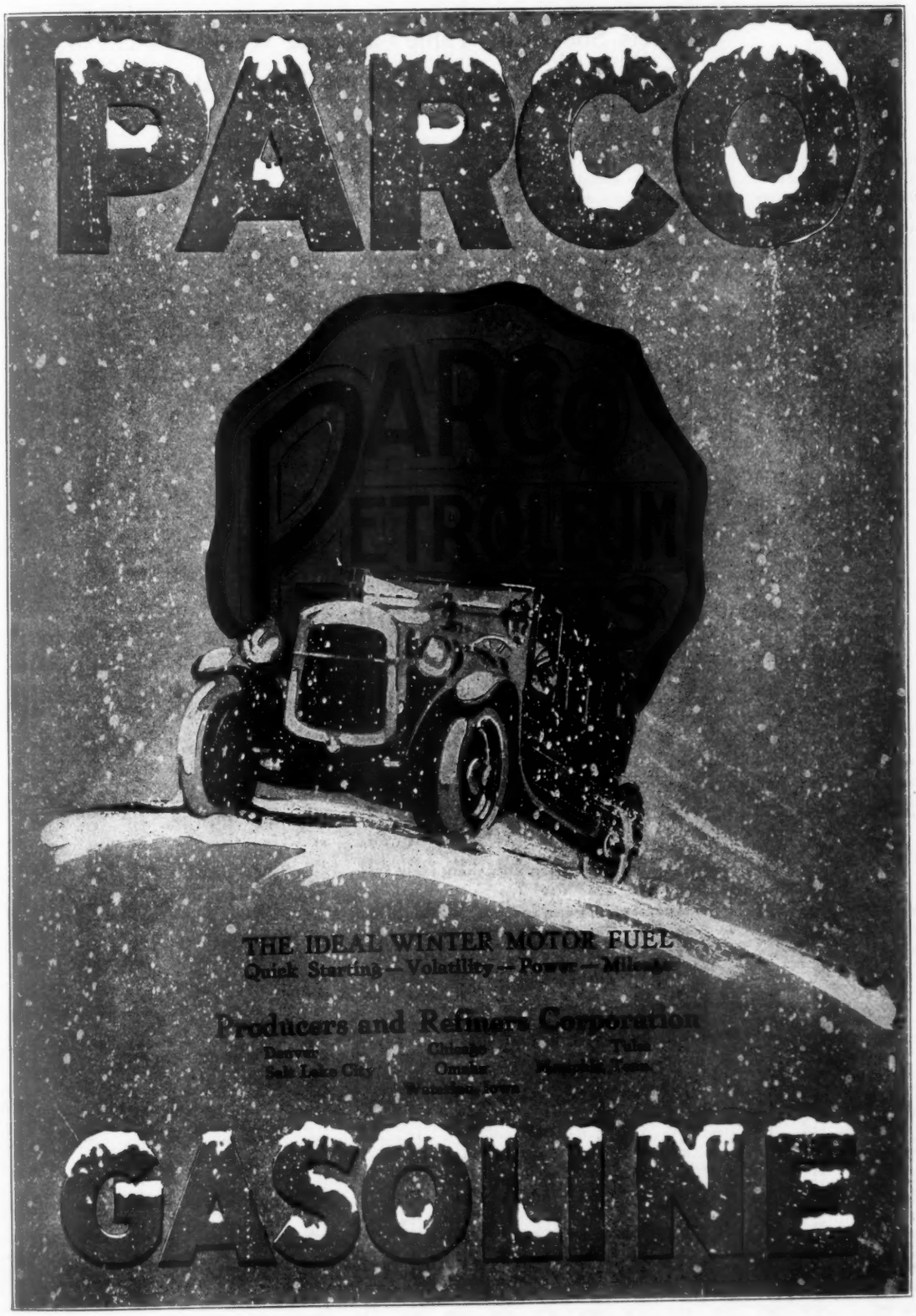
Members of the Northwestern Independent Oil Association will promote the consumption of refined products produced and refined in Montana, according to a resolution adopted at the meeting of the association held last week at Helena, Mont. Oil jobbers throughout the State who were in attendance at the meeting pointed out that Montana has only started in the producing and refining of crude and added impetus would be given if jobbers aided in disposing of a large part of the manufactured products within the State. To that end jobbers were urged to build up an independent refining industry which would handle the State's crude production.

The association at the meeting went on record as opposed to the installation of pumps and tanks on a rental basis with retailers. It was also opposed, along with many other State associations, to the Dodge Motor Co., entering the lubricating oil business through its local dealers. Jobbers declared the action of the Dodge company was unwarranted and if permitted would mean a substantial loss to all retailers of refined products.

The next meeting of the association will be held at Lewistown, Mont., April 9.

EXPECT GREATER CONSUMPTION

Prospects for a still greater consumption of refined products during 1924 are very favorable, according to E. J. Bullock, director of purchases of the Standard Oil Co. of Indiana. Mr. Bullock was at the Tulsa offices of the company last week, spending several days looking over the Mid-Continent situation. Mr. Bullock declined to make any statement regarding the gasoline situation but spoke optimistically regarding the price trend of all petroleum products due to the decline in crude production.


PARCO
THE IDEAL WINTER MOTOR FUEL
Quick Starting — Volatility — Power — Mileage
Producers and Refiners Corporation
Denver
Salt Lake City
Chicago
Omaha
Tulsa
GASOLINE

Entire Twelve Months' Period One of De

Facts Shown by Table Covering Weekly Prices of 75 Refined Products Quotations. Refined Decline Preceded Cut in Crude and Was Fir

By C. O. Willson

The year 1923 for practically all of the 12 months' period was one of declining prices in refined markets. In order that this fact may be more clearly visualized and be made available for future references the accompanying table was compiled covering the weekly prices of 75 refined products from all the refining centers east of the Rocky Mountains, together with the quotations on representative products for export trade. The prices given represent the low quotation as given in the weekly issues of The Oil and Gas Journal.

Attention is especially called to the summary of these prices found elsewhere in this issue, giving the average price for the first six months of the year, the second six months and finally the average price for the year. The weekly changes, together with average prices, serve to give a vivid picture of the decline in refined products.

A study of the weekly quotations, when considered with the changes in crude prices given in this issue, will reveal several developments of interest to the oil fraternity. The brief periods of rising prices are mute evidence of the futile attempt made on several occasions by refiners to withstand the downward tendency which brought the heavy losses to the refining industry generally.

One feature shown by the averages for the two six-months periods lies in the comparisons which show that the depreciation in the values of refined products affected all areas approximately the same. Prices for a period of few weeks might decline more rapidly in one refining area than another, but when considered for a period of six months or a year the total decline was practically the same. For instance, the Mid-Continent refining area

(*Tables giving average prices first six months of the year, second six months and yearly averages found on page 138*)

	January					February					March					April					May				
Gasoline and Naptha—	2	9	16	23	30	6	13	20	27		6	13	20	27		3	10	17	24		1	8	15	22	
Oklahoma (Group 3):																									
50-52, 450, end point	.09½	.09¾	.10¾	.11	.12	.12	.12½	.13¼	.13½		.13½	.13¼	.12¾	.12½		.12¼	.12¼	.12	.12		.11¾	.11	.10¾	.10¾	.13
56-58 450 end point	.10½	.10¾	.11¼	.11¼	.12½	.12½	.13¼	.13½	.13½		.13½	.13¾	.13	.12½		.12½	.12¼	.12½	.11½		.11¼	.10¼	.10	.10¼	.13
58-60, 437 (New Navy)	.11	.11¼	.11¾	.12¼	.13	.13¼	.13¾	.14½	.14½		.14½	.14	.13¾	.13		.13	.13	.12¾	.12		.11½	.10½	.10¼	.10¼	.13
60-62, 400 end point	.13	.13¼	.13½	.14	.14¾	.14¾	.15	.15½	.15¾		.15½	.15½	.15	.15		.14½	.14½	.14¼	.13½		.13¼	.12¾	.12	.12¾	.13
64-66, 375 end point	.16	.15	.15¼	.15¼	.15¾	.15¾	.16	.16¼	.16½		.16½	.16¾	.16¼	.16		.15¾	.15¾	.14¼	.14¼		.14¼	.13¾	.13	.13¼	.14
68-70, 350-365 end point	.17¼	.17	.16¾	.16½	.16½	.17	.17¼	.17¼	.17½		.17½	.17½	.17	.17		.16¾	.16¾	.16½	.16		.15½	.15	.15	.15	.16
Kansas:																									
66-60, 427 (New Navy)	.10¾	.11¼	.12¼	.12½	.13¼	.13¾	.14	.14½	.14¾		.15	.14½	.13½	.13¼		.13	.13	.13	.12		.11¾	.11¼	.10¼	.11	.13¾
North Texas:																									
50-52, 456 end point	.08½	.10½	.10½	.11¼	.11¾	.12½	.13	.13	.13½		.13½	.13¼	.13	.12½		.12½	.12½	.12¼	.11¼		.11	.10¼	.10	.10½	.13
58-60, 437 (New Navy)	.10½	.11	.11¾	.12¼	.12¾	.13¼	.14	.14	.14½		.14½	.14¼	.13¾	.13		.13	.13	.13	.12¼		.11½	.10¾	.10¼	.11¼	.13¼
64-66, 390 end point	.14½	.14½	.15	.15	.15½	.15¾	.15½	.16			.16	.16	.15½	.15		.15	.15	.15	.14½		.13½	.13	.12½	.13½	.14½
Pennsylvania:																									
52 naphtha	.13½	.13½	.13½	.14½	.14½	.14½	.14¾	.15½	.16		.16	.16	.16	.16		.15	.15	.15	.14¾		.14¼	.13¾	.13¾	.13¼	.13½
58 gasoline	.14¾	.14¾	.14¾	.15	.15	.15½	.16	.16¾	.17¼		.17¼	.17¼	.17	.17		.16¾	.16¼	.16¼	.15¾		.15	.14½	.14¼	.14	.14¼
60 gasoline	.15¾	.16	.16	.16	.16	.16½	.17	.17	.18¼		.18¼	.18¼	.18	.18		.17¾	.16¾	.16¾	.16		.16	.15½	.15¼	.15	.15½
64 gasoline	.18¼	.18¼	.18¼	.18¼	.18¼	.18½	.19¼	.19¼	.20½		.20½	.20½	.20½	.20½		.20½	.20½	.20½	.18¾		.17¾	.17¾	.17¼	.17¼	.17¾
68-70 gasoline	.23	.23½	.23¼	.23	.23½	.23½	.23	.23¾	.23¾		.23½	.23½	.23	.22¾		.22¾	.22½	.22½	.22		.21½	.21½	.21¼	.21¼	.21½
Natural Gasoline—																									
Oklahoma (Group 3):																									
Grade A, 72-78, under 375 e. p.																									
rec. 90%	.12	.12	.12½	.12¾	.13	.13¾	.14	.14½	.14¾		.14¾	.13¾	.13	.12¾		.12¼	.11¾	.11	.10¾		.08¾	.08¼	.07¾	.07¾	.10
Gr. B, 76-82, 375 e. p. rec. 85%	.11¾	.11¾	.12	.12¼	.12½	.13¼	.13¼	.13¾	.13¾		.13¾	.13¼	.12¾	.12		.12	.11	.10¾	.10		.08½	.08	.07½	.07¼	.09½
Gr. C, 80-88, 350 e. p. rec. 78%	.11½	.11½	.11¾	.12	.12¼	.13	.13	.13¼	.13¾		.13½	.13	.12¾	.11¾		.11	.10	.09¾	.08¾		.07¼	.06½	.06½	.06¼	.08¾
North Texas:																									
72-76 absorption	.12¼	.12	.12	.12	.12¼	.12¾	.13½	.13½	.14		.14	.13¾	.13½	.13		.12	.11	.10½	.10		.08½	.07½	.07½	.07½	.09
80-84 compression	.12	.10½	.10½	.11½	.11¾	.12¼	.13	.13	.13½		.13½	.13¼	.13¼	.12¾		.11½	.10½	.10	.08¾		.08¼	.07¼	.06½	.06½	.07½
Motor Natural Gas. (Blend)—																									
Oklahoma:																									
60-62, 450 end point	.10½	.10½	.11	.11	.11¾	.12½	.12¾	.13	.13½		.13½	.13	.12	.11¾		.11¾	.12	.11¾	.11		.10¾	.10	.09¾	.10	.11¼
68-70, 420-435 end point	.10	.10	.10½	.11½	.12¼	.13	.13¼	.13½	.13		.14	.12½	.12½	.12¼		.12¼	.12¼	.11¾	.11		.10¾	.10	.09½	.09¾	.11¼
Burning Oil—																									
Oklahoma:																									
41-43 water white kerosene	.04¾	.04¼	.04¼	.04¾	.04¾	.05	.04¼	.04¼	.04¼		.04¾	.04¼	.04¼	.04½		.04½	.04½	.04	.03¾		.03¾	.03¾	.03¾	.03¾	.03¾
42-43 water white kerosene	.04¾	.04½	.04½	.05	.05	.05¼	.04¾	.04¾	.04¾		.04¾	.04½	.04½	.04¼		.04¼	.04¼	.04¼	.04		.04	.04	.04	.04	.04
Kansas:																									
42-43 water white kerosene	.05	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04½		.04½	.04¼	.04¼	.04¼		.04¼	.04½	.04¼	.04		.04¼	.04¼	.04¼	.04	.04½
North Texas:																									
41-43 water white kerosene	.04¼	.04¼	.04½	.04	.04½	.04½	.04	.04¼	.04		.04	04	.04	.04		.04	.04	.04	.03¾		.03½	.03½	.03½	.03½	.03¾
Pennsylvania:																									
43 kerosene prime white	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼		.07¼	.07¼	.07¼	.07¼		.07	.07	.06¾	.06½		.06½	.06	.06	.06	.06
45 kerosene water white	.07¾	.07¾	.07¾	.07¾	.07¾	.09	.07¾	.07¾	.07¾		.07½	.07½	.07½	.07½		.07¼	.07¼	.07	.06¾		.06½	.06¼	.06¼	.06¼	.06¼
Fuel Oils—																									
20-22 (El Dorado)	.75	.75	.75	.70	.70	.85	.85	.90	.90		.90	.85	.85	.85		.90	1.00	1.00	1.00		1.00	.90	.85	.80	.85
Kansas:																									
24-26 fuel oil	.95	1.00	1.05	1.05	1.10	1.10	1.05	1.10	1.10		1.15	1.15	1.10	1.10		1.15	1.20	1.20	1.15		1.10	1.05	1.10	1.10	1.10
36-38 distillate	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½		.03¾	.03½	.03½	.03½		.03½	.03¾	.03½	.03¼		.03¼	.03	.03¾	.03¼	.03
Oklahoma:																									
24-26 fuel oil	.90	.90	.95	1.00	1.00	1.00	1.05	1.05	1.05		1.05	1.05	1.05	1.07		1.10	1.15	1.15	1.15		1.15	1.00	1.05	1.05	1.05
32-36 gas oil	.02¾	.02¾	.02¾	.03	.03	.03½	.03¼	.03¼	.03¼		.03¼	.03¼	.03¼	.03¼		.03¼	.03¼	.03½	.03½		.03½	.02¾	.02¾	.02¾	.02¾
38-40 straw distillate	.02¼	.03¼	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾		.03¼	.03¼	.03¼	.03¼		.03¼	.03¼	.03½	.03½		.03¾	.03¼	.03¼	.03¼	.03¾
North Texas:																									
24-26 fuel oil	.85	.85	.85	.95	.95	.95	1.00	1.15	1.15		1.15	1.15	1.15	1.10		1.05	1.05	1.15	1.15		1.10	1.05	1.00	.95	.85
32-36 gas oil	.02½	.02¼	.02½	.02½	.02½	.02½	.02¾	.03¼	.03		.03	.03	.03	.03		.03	.03	.03	.03		.02 2/3	.02¼	.02¼	.02¾	.02¾
38-40 straw distillate	.02¾	.02¾	.03	.03	.03	.03	.03	.03½	.03¼		.03¼	.03¼	.03¼	.03¼		.03¼	.03¼	.03¼	.03¼		.03¼	.02¾	.02¾	.02¾	.02¾
North Louisiana:																									
Fuel oil	.85	.85	.85	1.00	1.05	1.05	1.20	1.10	1.10		1.10	1.05	1.00	1.05		1.20	1.20	1.20	1.20		1.20	1.15	1.10	1.10	1.00
Gulf Coast:																									
Gas oil	.04	.04	.04	.04	.04	.04	.04½	.05	.05		.05	.05	.05	.05		.05	.05	.05	.05		.05	.04¾	.04¾	.04¾	.04¾
Fuel oil	1.25	1.35	1.35	1.35	1.35	1.35	1.45	1.60	1.60		1.60	1.60	1.60	1.60		1.60	1.60	1.60	1.60		1.60	1.55	1.55	1.40	1.40
Pennsylvania:																									
30°-34° fuel oil	.05¾	.06	.06	.06	.06¼	.06¼	.06¼	.06¼	.06¼		.06¼	.06¾	.06¼	.05¾		.05¾	.05¾	.05¾	.05¾		.05¾	.05	.05	.04¾	.04¾
36°-40° fuel oil	.06¼	.06¼	.06¼	.06¼	.06½	.06½	.06½	.06¾	.06¾		.06¾	.06¾	.06½	.06¼		.06	.06	.05¾	.05½		.05½	.05¼	.05¼	.05	.05¼
34° neutral	.07¼	.07½	.07½	.07¾	.07¾	.08	.08¼	.09	.10		.10	.10	.09¾	.09¾		.09¾	.09½	.09¼	.09¼		.09¼	.08¾	.08½	.08¾	.08¾
Neutral Oils—																									
Oklahoma:																									
160 vis., 3 color 20-25 cold test	.05¾	.05¾	.05¾	.06¼	.06¼	.07½	.06¾	.06¾	.06¾		.07¼	.07½	.07¼	.06¾		.06¾	.06¾	.06¾	.06¾		.06¾	.06¾	.06¾	.06¾	.06¾
180 vis., 3 color 23-28 cold test	.11½	.11½	.11½	.10¾	.10¾	.11¾	.12¼	.12¼	.12¼		.12¼	.12¼	.12¼	.12¼		.12¼	.12¾	.12½	.12¼		.12¼	.12¼	.12¼	.12¾	.12¾
200 vis., 3 color 23-28 cold test	.12	.12	.12	.12	.12	.13	.13	.13	.13		.13	.13	.13	.13		.13	.13	.13	.13		.13	.13	.13	.13	.13
180 vis., 5 color 23-28 cold test	.10	.10	.10	.10	.10	.11	.11	.11	.11		.11	.11	.11	.11		.11	.11	.11	.11		.11	.11	.11	.11	.11
200 vis., 5 color 23-28 cold test	.10½	.10½	.10½	.10½	.10½	.11½	.11½	.11½	.11½		.11½	.11½	.11½	.11½		.11½	.11½	.11½	.11½		.11½	.13¼	.13½	.13¾	.13¾
240 vis., 5 color 25-30 cold test	.12½	.12½	.12½	.12½	.12½	.13½	.13½	.13½	.13½		.13½	.13½	.13½	.13½		.13½	.13½	.13½	.13½		.13½	.13½	.13½	.13½	.13½
590-600 bright stock	.26	.26	.26	.26	.26	.27	.27	.27	.27		.27	.27	.27	.27		.27	.27	.27	.27		.27	.27	.27	.27	.27
124-126 white crude scale wax	.02¾	.02¾	.02¾	.02¾	.02¼	.02¾	.02¾	.02¾	.02¾		.02¾	.02¾	.02¾	.02¾		.02¾	.02¾	.02¾	.02¾		.02¾	.02¾	.02¾	.02¾	.03¾
Pennsylvania:																									
200 3 color	.23	.24	.24¼	.26	.27	.28	.31	.32	.32½		.33	.33	.33	.33		.33	.33	.33	.33		.33	.33	.33	.33	.33
600 Pennsylvania flash	.17	.17	.17¼	.17¾	.18	.18	.20	.21¾	.22		.22	.22	.22	.21½		.21	.20¾	.20½	.20½		.20	.19½	.19½	.19½	.19½
Pennsylvania bright stock	.33	.33	.33¼	.33½	.33½	.34½	.35	.40	.40		.40	.40	.40	.38		.39	.38	.38	.37½		.36½	.36½	.36½	.36½	.36¾
Gulf Coast:																									
No. 3 color, 200 vis., pale oil	.11¼	.11¼	.12	.12	.12	.12	.12½	.12½	.12½		.12¾	.12¾	.12¾	.12¾		.12¾	.12¾	.12¾	.12¾		.12¾	.12½	.12½	.12¾	.12
No. 5, 200 vis., red	.09	.09	.10	.10	.10	.10	.10½	.10½	.10½		.10½	.10½	.10½	.10½		.10½	.10½	.10½	.10½		.10½	.10½	.10½	.10½	.10
New York Domestic Market:																									
Gasoline, bulk, delivered, N. Y.	.16	.16	.16	.16	.16	.16	.16	.16	.16		.20	.20	.20	.20		.20	.20	.20	.20		.16	.16	.16	.16	.16
Cylinder, extra light filtered	.37	.37	.37	.37	.37	.37	.38	.38	.38		.38	.40	.40	.40		.40	.40	.40	.40		.40½	.40½	.40½	.40¾	.40¾
Cylinder, bright stock	.45	.45	.45	.45	.45	.45	.46	.46	.46		.46	.47	.47	.47		.47	.47	.47	.47		.47½	.47½	.47½	.47¾	.47¾
Paraffin, 903 spec. gravity	.24	.24	.24	.24	.24	.24	.24	.24	.24		.24	.24	.24	.24		.24	.24	.24	.24		.24½	.24½	.24½	.24¾	.24¾
Bunker oil 14 plus delivered in barges, bbl.	1.45	1.50	1.50	1.50	1.50	1.60	1.60	1.60	1.60		1.60	1.60	1.60	1.60		1.60	1.70	1.70	1.70		1.70	1.70	1.70	1.70	1.70
Diesel oil, at refinery, gal.	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04½	.04¾	.04¾		.04¾	.04½	.04½	.04½		.04½	.04½	.04½	.04¾		.04½	.04½	.04½	.04¾	.04¾
120-122 a. m. p. wax	.03	.03	.03	.03	.03	.03	.03¼	.03¼	.03¼		.03¼	.03¼	.03¼	.03¼		.03¼	.03¼	.03¼	.03¼		.03¼	.03¼	.03¼	.03¼	.03¼
New York Export Market:																									
Motor gasoline in gal. cases	.28¾	.28¾	.28¾	.28¾	.28¾	.28¾	.28¾	.28¾	.29¾		.29¼	.29¾	.29¾	.29¾		.29¾	.29¾	.29¾	.28¼		.28¼	.28¼	.28¼	.28¾	.28.66
Motor gasoline, U. S. Navy	.15½	.15½	.15½	.15½	.15½	.15½	.15½	.16¼	.16¼		.16¼	.16¼	.16¼	.16¼		.16¼	.16½	.16½	.16		.16	.15	.15	.15	.15
Naphtha 60° p. 39-61 sp. grav.	.18	.18	.18	.18	.18	.18	.18	.18	.19		.19	.19	.19	.19		.19	.19	.19	.18½		.17½	.17½	.17½	.17¾	.17¾
Standard white kero. bulk, gal.	.07	.07	.07	.07	.07	.07	.07	.07	.07		.07	.07	.07	.07		.07	.07	.07	.06½		.06	.06	.06	.06	.06
Standard white in bbls., gal.	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼		.13¼	.13¼	.13¼	.13¼		.13¼	.13¼	.13¼	.13¼		.13	.13	.13	.13	.13
Standard white in cases	.16	.16	.16¼	.16¼	.16¼	.16¼	.16¼	.16¼	.16¼		.16¼	.16¼	.16¼	.16¼		.16¼	.16¼	.16¼	.16		.15½	.15½	.15½	.15¾	.15¾
Water white in bulk	.08	.08	.08	.08	.08	.08	.08	.08	.08		.08	.08	.08	.08		.08	.08	.08	.07¾		.07	.07	.07	.07	.08
Water white in barrels	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼		.14¼	.14¼	.14¼	.14¼		.14¼	.14¼	.14¼	.14¼		.14	.14	.14	.14	.14¼
Water white in cases	.17¼	.17¼	.17¼	.17¼	.17¼	.17¼	.17¼	.17¼	.17¼		.17¼	.17¼	.17¼	.17¼		.17¼	.17¼	.17¼	.17		.16¼	.16¼	.16¼	.16¾	.16.9

Declining Prices in Refined Oil Markets

All Refining Sections East of the Rocky Mountains and Export to Respond to Recovery. Not Many Products That Remained Firm

—the greatest open market of the industry—always quick to respond to periods of depression or booms, generally led in the gradual declines, but when considered over the first and latter halves of the year did not suffer much more than other refining areas.

When considered along with the crude prices tables found in this issue it will be found that the refined market declines preceded rather than followed the crude price declines. This is true until the overproduction of crude had ceased and then the opposite was true for the refined market is equally as sensitive in sensing a change for the better in conditions affecting the entire oil industry.

Although the refined market decline applied to practically all refined products, notably gasolines, kerosenes and fuel oils, there were a few products which were able to maintain firm or slight advancing prices. This applied to many grades of neutrals and wax, due to the fact that a large part of the new crude production was not suitable for the manufacture of the two products. It is also true that the output of these products constitutes a comparatively small part of the refinery output and for that reason the supply and demand situation can be more easily regulated and an overproduction and resulting lower prices prevented.

The following prices are f. o. b. refinery in sellers' cars, unless otherwise noted. The quotations as carried weekly in The Oil and Gas Journal are based on the prices at which the bulk of the product on the date designated was moving from the refineries. In several refining areas in the weekly price tables it is customary to give a spread of from ⅛ to 1 cent on gasolines, kerosenes and other products in which the gallon is the price unit, with a spread of from 2½ to 15 cents a barrel on products quoted with the barrel as the price unit. As previously stated, the low weekly quotations are given in the following table to which the customary spread can be added if data giving the average prices for the six months and yearly periods are desired.

June			July					August				September				October				November				December			
12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	2	9	16	23	6	13	20	27	4	11	18	25
.11½	.10½	.09½	.09½	.09	.09	.09	.08½	.08¼	.07⅝	.07	.06⅝	.06¼	.06	.05	.06	.05	.06	.06	.06	.05⅝	.05⅝	.05¼	.05½	.05⅝	.06	.06½	.07
.11	.10⅛	.09⅛	.09¼	.09¼	.09	.08⅝	.08¼	.07⅝	.07	.06½	.06¼	.06	.06	.06	.06	.06¼	.06½	.06¼	.06¼	.06	.06	.06	.06	.06¼	.06¼	.06⅝	.07⅛
.11⅛	.10⅜	.10	.09½	.09½	.09½	.09¼	.09	.08½	.08	.07¼	.06⅝	.06⅛	.06¼	.06½	.06½	.06¼	.06⅝	.06⅜	.06⅜	.06¼	.06½	.06½	.06½	.06⅝	.06⅝	.07¼	.07½
.12⅛	.12	.11⅝	.11½	.11	.11	.10¾	.10½	.10	.09½	.09	.08⅝	.08⅝	.08	.08¼	.08¼	.08	.08¼	.08¼	.08¼	.07⅝	.07½	.07¼	.07½	.07½	.08	.08¼	.08⅜
.13⅛	.12	.12⅛	.12½	.12¼	.12	.11⅝	.11½	.10⅝	.10½	.10¼	@10	.09⅝	.09¼	.09¼	.09¼	.09¼	.09½	.09½	.09½	.08⅝	.08½	.08¼	.08¼	.08½	.08⅝	.09	.09
.15⅛	.15	.13	.14	.13¼	.13½	.13¼	.13	.12⅝	.12	.11¼	.11	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10½	.10	.09⅝	.09⅝	.09½	.09⅝	.10	.10
.11⅜	.10⅛	.10	.10	.09½	.09⅝	.09⅛	.09	.08⅝	.08¼	.07⅝	.07	.06⅝	.06⅛	.06⅜	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅛	.06¼	.06¼	.06¼	.06⅝	.07	.07¼	.07⅝
.11⅜	.10	.09⅛	.09½	.09¼	.09	.08⅝	.08⅜	.08⅛	.07½	.07½	.06⅝	.06½	.06	.06¼	.06	.06	.06	.06	.06	.05⅝	.05⅝	.05½	.05¼	.05⅝	.06	.06¼	.06⅝
.11⅜	.10⅛	.09	.09⅝	.09½	.09¼	.09	.08⅜	.08⅛	.08¼	.07⅝	.06⅝	.06½	.06¼	.06⅛	.06¼	.06⅜	.06½	.06⅛	.06⅛	.06¼	.06⅜	.06	.06¼	.06½	.06⅜	.07	.07½
.11⅜	.13	.13	.13	.12⅝	.12	.11½	.11¼	.10	.10½	.10	.09½	.09¼	.08½	.08½	.08½	.08⅛	.08½	.08⅝	.08⅝	.08⅛	.08	.08	.08	.08	.08⅝	.08⅝	.09
.11⅜	.13½	.12⅝	.12⅝	.12	.12⅝	.11	.11¼	.11⅛	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.10⅜	.10	.09⅛	.09⅛	.09⅛	.08⅝	.08⅝	.08⅝	.08⅝
.11⅜	.14⅛	.13⅝	.13⅝	.13¼	.13	.12½	.12	.12¼	.12¼	.12	.12	.12	.12	.12	.12	.11⅝	.11⅝	.11⅝	.11⅝	.10⅜	.10¼	.10¼	.10¼	.10	.09⅝	.09⅝	.09⅝
.11⅜	.15⅛	.14⅛	.14⅝	.14½	.14	.13½	.13	.13¼	.13	.12⅝	.12⅝	.12⅝	.12⅝	.12¼	.12¼	.12¼	.12¼	.12	.11⅞	.11⅜	.10⅝	.10⅝	.10⅝	.10½	.10	.10	.10
.11⅜	.17⅛	.17¼	.17¼	.17¼	.16⅝	.16⅝	.16¼	.15½	.15½	.15½	.15½	.15½	.15½	.14⅝	.15	.15	.15	.14⅝	.14⅝	.14	.13	.13	.13	.13¼	.13	.13	.13
.11⅜	.21⅛	.20⅝	.20½	.20½	.20¼	.20	.19⅝	.19½	.19	.19	.19	.19	.18⅝	.18¼	.18¼	.18¼	.18¼	.18	.18	.17⅝	.17	.17	.17	.16	.16	.16	.16
.08⅛	.08⅛	.08⅛	.08⅛	.08	.07	.06⅛	.06¼	.06¼	.06¼	.06⅛	.06⅝	.07	.07¼	.07⅛	.07⅛	.07⅝	.07⅝	.07⅝	.08	.07	.06⅛	.06¼	.06¼	.05⅛	.05⅛	.05⅛	.06
.07	.08	.08	.07⅛	.07¼	.06⅝	.06¼	.06	.06	.06	.06¼	.06⅛	.06⅝	.07	.07	.07	.07½	.07⅝	.07⅝	.07⅝	.06⅝	.06¼	.06	.05¼	.05¼	.05¼	.05	.05⅛
.08	.07	.07	.06⅝	.06⅛	.06	.05⅝	.05¼	.06¼	.05⅝	.06	.06	.06⅛	.07	.07	.07	.07⅛	.07⅛	.07⅛	.07⅛	.06⅛	.06	.05⅛	.05⅛	.05	.05	.04¾	.05
.08	.09½	.08⅛	.08⅛	.07⅛	.07	.06⅛	.06¼	.06	.06¼	.06¼	.06⅛	.07	.07¼	.07¼	.07¼	.07	.07⅛	.07⅛	.07⅛	.07	.06¼	.06	.05⅝	.05⅝	.04¾	.04¾	.05
.07⅛	.07	.07⅛	.08	.07	.06	.06	.06	.05¾	.05¾	.06	.06	.06⅛	.07	.07	.07	.07	.07¼	.07¼	.07¼	.06⅛	.05⅝	.05⅛	.05	.04¾	.04¾	.04¾	.05
.10⅛	.09	.08¾	.08½	.08⅛	.08¼	.08	.07⅝	.07⅝	.07⅛	.07	.06⅛	.06¼	.06	.06⅛	.06¼	.06¼	.06¼	.06¼	.06¼	.06	.06	.05⅝	.05⅝	.05⅝	.06	.06¼	.06⅛
.11⅛	.09	.08⅝	.08½	.08⅛	.08¼	.08	.07⅝	.07⅝	.07⅛	.07	.06⅛	.06¼	.06	.06⅛	.06¼	.06⅝	.06⅝	.06⅝	.06⅝	.06⅛	.06¼	.06	.05⅝	.05⅝	.06	.06½	.06⅝
.03⅛	.03⅛	.03⅛	.03¼	.03¼	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅛	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.04	.04	.04⅛	.04⅛	.04⅛	.04⅛	.04⅜	.04⅛
.04	.04	.04	.04	.04	.04	.03⅞	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04¼	.04⅛	.04⅜	.04⅛	.04⅛	.04⅛	.04⅜	.04⅜	.04⅜
.04⅛	.04⅛	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04¼	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅜	.04⅜	.04⅜	.04⅜
.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅜	.03⅛	.03⅛	.03⅛	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.04¼	.04⅛	.04¼	.04⅛	.04¼	.04¼
.06	.06	.06	.06	.05⅝	.05⅝	.05⅛	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.06	.06	.06⅛	.06⅜	.07	.07	.07	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝
.06⅛	.06⅛	.06	.06	.06	.06	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.06	.06	.06	.06⅛	.06⅛	.07	.07¼	.07¼	.07¼	.07¼	.07	.07	.07	.07	.07	.07	.07
.85	.75	.70	.70	.70	.75	.80	.90	.85	.85	.85	.90	.85	.75	.75	.80	.80	.75	.70	.70	.72½	.65	.60	.60	.62½	.62½	.65	.70
1.10	1.05	1.00	1.00	1.00	1.00	1.05	1.10	1.15	1.15	1.15	1.10	1.05	1.00	1.10	1.00	.100	.100	1.00	1.00	1.00	.85	.85	.85	.85	.90	.90	.95
.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02½	.03⅜	.02⅝	.03	.03¼	.03⅛	.03⅛	.03⅛	.03⅛	.02⅝	.02⅛	.02⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛
1.00	1.00	.95	.90	.90	.90	.87½	.87½	.90	.95⅛	.95	.95	.90	.82⅛	.82½	.82½	.83⅛	.80	.80	.80	.77½	.70	.70	.70	.70	.75	.75	.80
.03⅛	.02⅝	.02½	.02½	.02½	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅛	.02⅝	.02⅝	.02⅝	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅝	.02⅝	.02⅛
.03	.03	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅛	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02
.85	.85	.85	.85	.80	.80	.80	.85	.85	.85	.90	.85	.85	.75	.82½	.82½	.82⅛	.70	.65	.65	.60	.60	.60	.60	.60	.70	.75	.75
.02⅝	.02⅝	.02⅛	.02½	.02½	.02⅛	.02⅛	.02⅝	.02⅝	.02⅝	.02⅛	.02⅛	.02½	.02¼	.02⅝	.02¼	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅝
.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.03⅛	.02⅝	.02⅝	.02⅛	.02⅝	.02⅝	.02⅝	.02⅝	.03⅛	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.03	.03	.03
1.00	.95	.95	.90	.85	.85	.90	.90	.90	.95	.90	.85	.85	.85	.80	.80	.80	.75	.75	.70	.70	.70	.65	.65	.65	.70	.70	.70
.04⅝	.04⅝	.04½	.04⅝	.03⅝	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03¼	.03¼	.03¼	.03⅛	.03⅛	.03	.03	.03	.03	.02⅝	.02⅝	.02⅝	.02⅝	.03⅛	.03⅛
1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.35	1.35	1.35	1.35	1.30	1.20	1.20	1.20	1.20	1.15	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.15	1.15
.04⅞	.04⅞	.04⅞	.04⅞	.04⅞	.04⅞	.04⅞	.04⅝	.04⅝	.04⅝	.04⅝	.04⅞	.04⅞	.05	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.04⅝	.04⅝	.04⅝	.04⅝
.05⅛	.05⅛	.05⅛	.05⅛	.06	.05	.04⅝	.04⅝	.04⅝	.04⅝	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05	.05	.05	.05
.08⅛	.07⅛	.07⅛	.07⅛	.07⅛	.07⅛	.06⅛	.07	.07	.07	.07	.07	.07	.07	.07¼	.07¼	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07⅝	.07⅝
.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝
.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
.12⅛	.12⅛	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12
.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛
.47⅛	.47⅛	.47⅛	.47⅛	.47⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44	.44	.44	.44	.44	.44	.44	.44
.34⅛	.34⅛	.34⅛	.34⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.23⅛	.22⅛	.22⅛	.22⅛	.22⅛	.22⅛	.22⅛	.22⅛	.22⅛
1.70	1.70	1.70	1.70	1.70	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.45	.145	1.45	1.45	1.45	1.45	1.45	1.35	1.35	1.35	1.35	1.35
.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝
.03¼	.03¼	.03¼	.03¼	.03½	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.04
28.65	28.65	28.65	28.65	27.15	27.15	27.15	27.15	27.15	27.15	26.15	26.15	26.15	26.15	26.65	26.65	26.65	25.15	25.15	25.15	24.15	24.15	24.15	24.15	24.4	24.4	24.4	24.4
.15	.15	.15	.15	.13½	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12	.12	.12	.11.5	.11⅛	.11⅛	.11⅛	.10⅛	.10⅛	.10.5	.10.5	.10.5	.10.5	.10.5
.17⅛	.17⅛	.17⅛	.17⅛	.14⅛	.14⅛	.14⅛	.14⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13	.13	.13	.12.5	.12⅛	.12⅛	.12	.12	.12	.12	.12	.12	.12	.12
.06	.06	.06	.06	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.06	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
.13	.13	.13	.13	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.13	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14
.15⅛	.15⅛	.15⅛	.16⅛	.16⅛	15.4	15.4	15.4	15.4	15.4	15.4	15.4	16.4	15.4	15.4	15.4	15.4	15.9	16.9	16.9	16.9	16.9	16.9	16.9	17.16	17.16	17.16	17.16
.08	.08	.07	.07	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.07	.08	.08	.08	.08	.08	.08	.08	.08	.07	.07
.13	.13	.14	.14	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.14	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
16.9	16.9	16.9	16.9	16⅛	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.9	17.9	17 9	17.9	17.9	17.9	18.16	18.5	18.5	18.5

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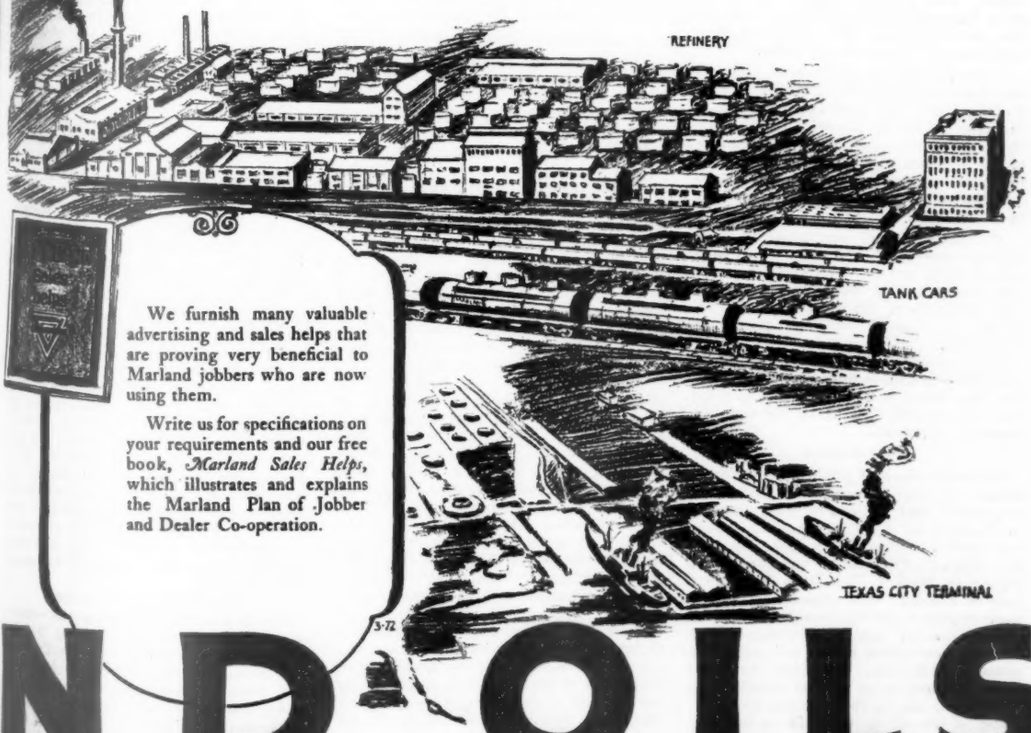

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Refinery Chemist an Important Factor

Research Work Offers Big Field in Developing More Valuable Products. Helps in Meeting Competition. Public Is Aided

By H. T. Bennett
Chief Research Chemist, Cosden & Co.

By analysis of samples submitted to the purchasing department, by competing salesmen, the material best suited to the needs of the company may be selected. It is obvious that the man who knows the real nature, and, therefore, the possibilities and limitations of his materials, is at least a neck ahead in the race with one who judges quality by the price he pays or by the affirmation of a salesman whose interest lies only in making a single sale. For example, two samples of Fuller's earth, one from Texas and one from Florida, may have exactly the same appearance, but the former may be only 70 per cent as efficient as the latter. Likewise, one sample of sulphuric acid may contain 94 per cent acid whereas another sample of the same appearance may contain only 92 per cent. Litharge and sulphur, two materials used in large quantities by the refiner should be practically a hundred per cent pure, but products are on the market which contain one to two per cent impurities.

Large quantities of paint are used in a refinery for painting tanks, stills, towers, etc., and in the selection of the proper paint the chemist, by making a few practical tests on a small scale, can aid the purchasing agent in selecting the best and most economical product. Likewise, by the analyses of other materials, such as caustic soda, soda ash, lime, etc., the chemist saves the refiner many dollars by selecting the best and most economical product.

After the purchase, the chemist acts as an inspector of the incoming shipments. By careful testing, the acceptance of inferior material is avoided. The acceptance of sulphuric acid containing 0.1 per cent or more nitric acid would cause considerable trouble to the oil treater. A small percentage of nitric acid in the acid used for treating makes it difficult to obtain oils of the proper color, especially in refining pressure still products; for the same reason the presence of more than a trace of selenium is also undesirable.

Should Analyze Materials

The accuracy of instruments purchased, such as hydrometers, thermometers, graduated cylinders, etc., is usually checked by the chemist, thus preventing the acceptance and use of inaccurate instruments by the testers.

By analysis of materials purchased, the proper use of the material may be made. In emergencies it frequently is necessary to decide whether a substitute material may be used. It is only by knowing the nature of the material on hand, and the conditions which it must encounter in actual service that an intelligent decision can be made. For example, a copper screen would not be recommended if it were to be used in a place where it would come in contact with sulphur gases or liquids containing sulphur compounds, nor would a packing containing considerable rubber be recommended for work where it would come in contact with hot oil.

Analysis, like the accounting department, checks purchases and prevents mistakes, provided the figures it yields are interpreted and applied with full understanding of the use of the material.

Check Up on Rival

Examination of competitors' products enables the refiner to determine whether the popularity of his rivals' goods is due to superior quality or clever advertising. By proper interpretation of the tests, the mode of manufacture, whether it is a straight run, cracked, or blended product may be ascertained, and the crude from which the oil is manufactured determined. For example, a lubricating oil from an asphaltic base crude has a low Baume gravity, low cold test and low flash as compared with a stock from Pennsylvania crude. The sulphur content of an oil from Mexican or South Texas crude is also usually greater than that from Mid-Continent or Pennsylvania crude.

A gasoline containing cracked products will generate heat when shaken with concentrated sulphuric acid and a portion of the gasoline will be absorbed by the acid. By either noting the rise in temperature or the percentage of gasoline absorbed by the acid an approximate idea of the quantity of cracked product present may be ascertained.

The presence and percentage of lard, tallow, rapeseed oil and degras in a compound stock can be determined by boiling a sample with alcoholic potash and then determining the quantity of the oil which has reacted with the caustic to form soap.

Thus by analyses of competing goods, the refiner is able to keep abreast of what his competitor is doing and prevent the loss of business to a rival, through his superior knowledge.

Plant Control

By examination of products at different stages of their manufacture, uniformity of product may be insured and mistakes in treating or handling detected before the finished product is damaged. By testing products for acidity and alkalinity, injury to product and plant equipment may be avoided. The presence of acid in wax distillate which would attack the press blankets, can be determined and the acid neutralized before the product is pressed. Likewise, incomplete neutralization of acid in a product which is to be distilled can be detected and the darkening of the oil by the acid on heating, and injury to still equipment avoided. The use of an excessive quantity of caustic soda by the treater can be detected and the waste of chemical with the consequent injury to the oil prevented.

The determination of the quantity of sediment and carbon formed by burning a gas oil (Conradson carbon residue test) which is to be charged to pressure still may prevent the use of a stock which would deposit carbon on the bottom of the still and cause a hot spot with the consequent temporary shutdown of the still.

By heating samples of gasoline and kerosene from the agitator, with a strip of polished copper, the presence of excess free sulphur may be detected. If the strip is darkened appreciably, the treater is cautioned against the use of too much sulphur during the sweetening operation.

Remedies Plant Troubles

The chemist, by conducting laboratory experiments in which only one variable is changed at one time, is frequently able to recommend changes in operations which reduce manufacturing costs.

Yields have been increased by lowering or elevating temperatures during different stages of refining, and by more careful regulation of the quantity and concentration of chemicals.

The chemist is frequently called upon to remedy plant troubles. Operating conditions are frequently changed, that is, a new crude may be blended with regular stocks and operations not changed to meet the new condition until trouble is detected. Then the chemist, by conducting experiments, can recommend the proper changes, such as increasing the acid treatment, making a higher cut, or by handling the new product separately or possibly by eliminating the new crude.

Crudes containing magnesium chloride and acid treated pressure still products frequently liberate corrosive acids, such as hydrochloric, sulphuric and sulphurous acids which readily attack still equipment. When this occurs the method of treating the products before distillation are investigated and the necessary changes recommended to eliminate the trouble.

Difficulty is sometimes experienced in removing the last traces of oil from wax. By careful investiation the method of refining and pressing the wax distillate and the method of cooling and sweating the slack wax, the source of trouble is frequently located.

Test Efficiency

By analyses of raw materials, intermediates and finished products, the efficiency of operating conditions may be ascertained. For example, in the recovery of acid from acid sludge each stage of the operation may be checked by analyzing the acid sludge for total acid content, the weak acid after it has been separated from the sludge, and finally the acid after it has been concentrated to the proper strength. From the analyses and the record of the volume of each product obtained, the efficiency of the process may be calculated. Frequently, by making such a survey of operations unnoticed losses are detected and experiments can be conducted to reduce them.

By determining the quantity of gasoline in the residue gas, the efficiency of gasoline recovery plants can be checked. If the gas contains any appreciable quantity of gasoline, it may be due to mechanical trouble, high temperature of the gas and cooling water or to high percentage of air in the gas. The presence of air in still or casinghead gas makes it particularly difficult to compress or absorb the gasoline from the gas. The percentage of air in a gas can be determined quickly by the chemist and by testing samples from different parts of the plants leaks can be detected.

By the analysis of flue gases for carbon monoxide and carbon dioxide the efficiency of fuel consumption may be checked.

Research

The research chemist can more than earn his salary by studying methods to eliminate or decrease waste and to utilize waste products. In former years few companies made any effort to collect the still gases for gasoline recovery, and very few attempted to utilize the sludge acid obtained from the treating operations. Today practically all progressive refiners have gasoline compression or absorption plants for the recovery of gasoline from the still gases. Some large refiners also have gas-tight storage tanks connected to the gas plants and thus recover a portion of the gasoline which would otherwise be lost by evaporation.

Sludge acid which formerly was buried or illegally dumped into streams is now being converted into the 66 acid and fuel oil by the progressive refiner.

By experimenting with products to be treated and studying the manner in which they are handled the chemist frequently is able to recommend methods of reducing the quantities of water, caustic, acid, litharge and sulphur required to obtain a marketable product.

The research chemist of a progressive company often is requested to investigate new processes and inventions, and to make recommendations concerning them. If the process appears to have merit, small laboratory experiments are first made, then if it still appears promising experiments are conducted on a semi-works scale. If the experiments are still successful, the process is tried on a plant scale under the supervision of the chemist who conducted the semiworks research. It frequently occurs that in installing a new process, unforseeen difficulties arise when it is first tried on a large scale, and often experiments must be conducted to remedy such troubles.

New Methods of Cracking

Today research chemists are investigating new methods of cracking heavier products into gasoline; new methods of recovering gasoline from casinghead and still gases by adsorbents such as charcoal and silica gel; new methods of removing sulphur and odoriferous compounds from gasoline and kerosene by means of silica gel, calcium hypochlorite, etc.; new methods of recovering chemical products from refinery gases, such as ethylene and propylene for making alcohols, glycols, etc.; new methods of recovering oils from B. S. by mechanical, electrical or chemical means; and new methods of reducing fire hazards and preventing evaporation losses by means of sealite, foamite, Amdyco, etc. By thus keeping in touch with new improvements and methods, losses can be reduced and processes improved.

The chemist in an up to date refinery

THE IMPORTANCE OF RESEARCH CHEMISTRY

In the last decade the petroleum chemist has risen rapidly from an obscure position to one of prominence. Today the managers, superintendents and department chiefs of many oil companies are chemists. In fact, every progressive company has recognized the value of the chemist and has placed him in a responsible position.

The chemist has risen to this position in the petroleum industry by his productive efforts. He has helped the refiner make and save money by studying plant operations and bringing them under scientific control. In the accompanying article, H. T. Bennett, chief research chemist of Cosden & Company, Tulsa, discusses chemical developments as they apply to the petroleum industry in its three divisions—analytical, plant control and research.

The second article describes the service department of the Cosden & Company refinery. It tells briefly the measures taken to aid employes and their families, including the buying of homes, educational work, care of sick and facilities for recreation.

The accompanying articles are the seventh and eighth of a series written by the heads of the several departments at the West Tulsa plant of Cosden & Company. The first article appeared in the January 3 issue of The Oil and Gas Journal. Articles by the heads of other departments are being prepared and will be published in subsequent issues.

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is given the time and the necessary equipment to conduct original research. The problems in the petroleum industry, however, are so numerous that the research chemist usually divides them into three divisions.

1. Improvement of analytical and testing methods.
2. Improvement of plant processes.
3. Study of the fundamental principles involved in refining petroleum.

However, the chemists in the petroleum industry, due to lack of time, devote the major portion of their attention to the problems in the first two divisions and leave the problems in the third division to the universities and Government chemists.

Many of the present accepted methods of testing petroleum products are rather crude and arbitrary, and consequently different operators in different laboratories disagree, and disputes arise between buyer and seller. Therefore, the research chemist should devote part of his time to the improvement and standardization of present methods of testing in order to obtain methods which can be quickly and easily duplicated by men with little technical training, such as the ordinary oil tester.

Need of More Gasoline

For many years manufacturing problems in the oil industry were simple; the principal products being kerosene, lubricating oil and wax. There was, therefore, no incentive, born by necessity, in the refining industry for research of a fundamental nature.

The first serious problem which confronted the industry was the removal of sulphur from the high sulphur Ohio and Canada crudes. By means of copper oxide this problem was solved by Herman Frash, a chemist. Since the solution of this problem the chemist has been called upon for the solution of problems on many occasions.

With the increased consumption of gasoline there was a demand for methods of obtaining more gasoline from a barrel of crude. A chemist then invented the first successful pressure still which increased the yield of gasoline 20 per cent or more.

The method of refining gasoline before the advent of the pressure still was rather simple, but the products obtained by cracking gas oil were rather difficult to treat and the chemist was again called upon for help. The chemist, by experimenting found means of handling these cracked products by the use of the usual chemicals—sulphuric acid, caustic soda, litharge and sulphur. Today, by the improvement of the methods of cracking, increased yields of gasoline can be obtained. However, some of these products are rather difficult to treat by the usual methods, and the chemist has been called upon for assistance. Today we have the calcium hypochlorite and silica gel methods of handling cracked products, and the future will probably see the use of other chemicals besides sulphuric acid, doctor solution and sulphur.

Color Not Important

Before too much time is devoted to obtaining methods for removing sulphur and color compounds from gasoline, investigations should be conducted to determine the actual need of highly refined gasoline for motor fuel and to ascertain if it is necessary to remove bad smelling sulphur and color compounds completely in order to obtain efficient service from the gasoline. It is very doubtful if a gasoline which has a faint yellow tint when viewed in a visible pump bowl is a less desirable motor fuel than one which is as white as water. If high degree refinement is proven unnecessary the public should be educated to use less highly refined products and thus increase the yield and lower the cost of motor fuel.

The research chemist is endeavoring to improve and find new methods of refining lubricating oils. The present methods are rather costly and will probably become more so, due to the increasing exactness of trade requirements.

At the present time interest is centered upon new methods of decolorizing and removing emulsifying bodies from lubricating stocks. The use of color adsorbents, other than Fuller's earth, are being investigated, that is, silica gel, acid treated California clays, etc. New methods of neutralizing are also being considered.

The research chemist is constantly confronted with emulsification problems. In refining emulsions are frequently formed which he is called upon to break, but the greatest problem is the recovery of oil from the material the oil producer knows as "B. S." or bottom settlings. This material may contain from 20 to 80 per cent good oil and many new fields, such as El Dorado and Smackover, produce much of this material. In addition, it collects at the bottom of nearly every crude or fuel oil storage tank. Means have been found for breaking these emulsions, but there is still opportunity for obtaining less costly methods.

Unsaturated Compounds

As stated before, the industrial chemist has little time to devote to the fundamental principles of petroleum chemistry, but the industry is confronted with some problems, the solution of which would be of much value. As cracked gasolines are more plentiful in motor fuels and as the removal of gum forming constituents therein becomes important, it is clear that we need to know more about the chemistry of the unsaturated compounds. Likewise with the increased use of high sulphur crudes, more data should be available concerning the chemistry of the sulphur compounds, and with the demand of the trade for lubricating oils which will not emulsify, more work should be conducted on the fundamental principles of emulsion problems.

In spite of the fact that the specific heats and heats of vaporization of petroleum products are necessary for the calculation of the quantity of heating and condensing area required in various refinery equipment, these data are not available for all products. The specific heat of a number of products in the liquid phase is known, but practically no work has been conducted for determining the specific heat in the vapor phase at elevated temperatures. Work of this nature would put refinery engineering on a more scientific basis.

The problem of overproduction of petroleum and its products may be solved by the encouragement of chemical research. Other industries when hard pressed have found new uses for their products, and in fact, it has not been many years since gasoline was considered a waste product and a nuisance.

May Find Other Uses

Past investigations have simply been concentrated on finding new ways of burning the lighter fractions and little work has been conducted to find other uses for them. This is natural, however, as petroleum is such an inflammable product, but it can and has been converted into products which are practically noninflammable. By combining petroleum products with other chemicals, compounds may be obtained which can be used as anaesthetics, solvents, rubber substitute and dyes.

Today isopropyl alcohol is made from still gases on a commercial scale. This alcohol is not only burned, but being of a nonintoxicating nature, is sold as a sol-

Many of the products which could be made from petroleum are 10 to 20 times more costly than gasoline, and consequently offer the refiner some incentive to investigate their manufacture. The probable reason for so little work being done to date is that the chemical reactions involved are difficult to control and objectionable byproducts which are difficult to remove from the desired product are formed. But, if the production of crude continues at the present rate, the companies which can manufacture the most valuable products from a barrel of crude will be the ones to survive.

Thus the chemist by the analyses of materials can hold deliveries to a standard and keep the refiner informed about the methods of his competitor. The research chemist by studying plant operations can assist the refiner to bring processes under scientific control, locate and remedy the causes for low yields or poor product, check the efficiencies of processes, check the soundness of new inventions and investigate methods for the manufacture of more valuable products from petroleum.

One of the greatest benefits from maintaining a chemical research organization is the fact that it will enable the manufacturer to keep ahead of the art and thus be in a strong position to meet competition, both in quality and the cost of the product.

Finally, the public is benefited as research ultimately reduces the selling price of old products and gives them the advantage of new and useful ones.

PRACTICAL ASSISTANCE RENDERED BY REFINERY SERVICE DEPARTMENT

Under the name of the Welfare Department the Service Department of the Cosden refinery was established nearly six years ago. At that time West Tulsa was largely a town of tents and shanties located on a sand hill. The irregular streets could faintly be discerned by the ruts in the road, which were almost impassable after a heavy rain.

There being no houses available it was necessary for the employes to make shift with any shelter they could obtain. These unsanitary conditions were the cause of a great amount of sickness and when the flu epidemic occurred five years ago a large number of employes were stricken down.

Then it was that a fund was established for the purpose of assisting the sick employes and members of their families. The company feeling that the best way to help those who were owing their doctor, grocer and landlord through being unable to work, loaned them sufficient money to liquidate the debts, returnable in small amounts deducted from their pay checks.

In this way hundreds of men and members of their families who have undergone an operation have been helped to pay their doctor and hospital bills, when otherwise they would not have been able to obtain the necessary relief. Funeral expenses have been taken care of in the same way.

Upon the assumption that a man who is a property owner and is spending a part of his wages in taxes and the improvement of the community in which he lives, was a better citizen than one that was drifting from town to town with a few days work here and there, a campaign was started to endeavor to get the men to own their own homes.

Upon an employe finding a desirable home he wished to buy, or a lot he desired to build on, application is made to this department for a loan to make the first payment. If, after an investigation of his standing with the company, everything is found satisfactory, the proposed purchase is inspected in order to see that the property is worth the price and the abstract examined—the loan is then made to be repaid by semi-monthly deductions from the pay check.

In this way many hundreds of men have been assisted to own their own homes where otherwise they would now be paying rent. Not only is this done, but money is advanced to men to make improvements to homes they already have.

Interest is taken in the general uplift of the people who work at the plant, and the community in which they live. To better the schools frequent calls have been made at the school house and friendly relations carried on with the teachers, in order that efforts may be made to obtain more interest on the part of the parents. Parent-teacher meetings are attended.

To better the churches, frequent attendance at all the churches in West Tulsa is made and any assistance possible given by donations and cooperation —for the more contented and satisfied the employes, the more conscientiously they work.

To care for the widows and families of the employes in case of death, a group insurance was taken out with one of the old-time insurance companies. These policies commence after six months' employment when the employe is insured for $500. This increases at the rate of $100 for every four months in the service of the company, until $1,700 is reached. This is carried without a cost to the employe. Since this policy has been in effect, a number of policies have been paid, several for the full amount of $1,700.

At the same time as the Group Life Insurance Policy was taken out, effort was made to find some company which was offering a sick and accident policy for which the men could pay themselves, but this department was unable to find a reliable company that would write the desired terms. However, a year ago the matter was again taken up and a satisfactory policy obtained which the employes were glad to take advantage of. Since that time, over $16,000 has been paid out to the employes of this company for sickness and accidents which prevented them from earning their wages —thereby saving them from a large amount of distress and hardships.

Upon the Cosden Addition adjoining the refinery, 40 houses have been built for the employes. These are mostly six-room bungalows of the modern type. On account of the proximity to the work and for general convenience these are occupied by the foremen. In addition a pretty park and playground have been laid out, with a wading pool for the children during the summer months.

A playground supervisor is employed to direct the games of the smaller children and during the school months a free kindergarten is held in a house used for that purpose.

NORTH TEXAS MARKET HAS SLIGHT REACTION

FORT WORTH, Tex., Jan. 28.—New Navy gasoline is being generally quoted in North Texas today at 11 to 11½ cents, having had a slight reaction over the previous week. Most plants evidence an unwillingness to sell ahead over the month of February, preferring at this time to take their chances on the spot market with the hope that further increases in the tank wagon and crude prices will help bolster up the present market, which is showing some tendency towards a further decline.

In view of this condition and the fact that February is generally conceded to be one of the poorest gasoline consuming months, unless there is some material change in the tank wagon and crude situation, a further reaction in the North Texas New Navy gasoline market may be expected.

The 64-66 gasoline ranges from 13¼ to 13¾ cents, with a very moderate demand for future shipments. Unless additional export orders are received, most plants which have been cutting this grade will return to New Navy preparatory to taking care of the aproaching summer New Navy consumption.

Kerosene remains strong at 5½ to 6 cents.

Natural gasoline remains about the same as last week, Grade A being quoted at 10½ to 10¾ with Grade B 9¾ to 10¼.

Gas oil is still scarce at 3½ for 32-36 and 4 to 4½ for 38-40.

Fuel oil is being generally quoted at $1.25 to $1.40. A majority of the sales at the higher price, are being made locally for use in the nearby drilling fields. Stocks are still somewhat below normal, and a fairly steady demand is taking care of the refiners' current supply.

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Year 1923 in Refining and Marketing

Review of the Principal Developments During the Past Twelve Months and Their Causes, With Discussion of the 1924 Outlook

By C. O. Willson

Accustomed as they have always been to unexpected and rapid changes in conditions affecting their welfare, the refining and marketing divisions of the oil industry during 1923 experienced a year unusual in several respects. A year ago if anyone had predicted that within a period of a few months considerable quantities of motor fuel would be moving under marginal contract from several refineries at 4½ cents a gallon and that this same gasoline would be placed in the tanks of automobile owners in important consuming centers as low as 10 cents a gallon, the prophet would have been scorned with the statement that such a condition of affairs was practically impossible and should it develop it would mean the financial ruin of either the refiners or marketers or both. These developments actually materialized, however, and although the cases cited are concededly extreme, they serve to indicate in a general way actual conditions for the year.

It is worthy of note that the calamitous predictions as to the financial status of companies concerned wholly with the manufacture and distribution of petroleum products did not develop. The worst period from a refiner's standpoint in recent years, if not in the entire history of the oil industry, has been gone through and the total casualties do not greatly exceed those of any previous year. Comparing individual refinery operations at the end of the year with those at the beginning shows that the great majority have been able to weather the gale and all entered the new year with renewed hope and the expectation that they will be reimbursed in part at least for the past year's losses.

Considered for the entire year, 1923 was an exceptionally favorable one for the marketer of refined products, both in regard to the margin of profit between the manufacturer's and consumer's prices and the volume of business transacted. Elsewhere in this issue will be found the tables showing the enormous increase in the consumption of petroleum products, together with comparative price data which is proof of the contention that considered strictly from the marketing end, the oil industry has little cause for complaint.

Despite the difference in profits during the past year the refining and marketing branches of the oil industry are so closely connected the writer will attempt to review the 1923 high points in both in the same article. The main developments of the past year will be given together with an explanation of their causes, the lessons learned, together with something of what may be expected in 1924 as gauged by representative refiners and marketers.

From Refiners' Standpoint

From the refiners' standpoint the year opened with a favorable outlook. Prices, especially gasolines, had been declining since the middle of the summer of 1922 but it was thought that with the beginning of the year the bottom had been reached and the trend in the future would be gradually upward. Supporting this feeling were the crude advances early in the year, made effective in practically every field east of the Rocky Mountains. Faced with this advancing crude market together with a record consumption for the season, refiners felt safe in obtaining as large a crude supply as possible and either maintained or increased their plant operations. As a result, there was a scramble for crude on the part of both large and small buyers.

1924 OUTLOOK

A gradual return to normal conditions of all factors entering into the refining and marketing of petroleum products.

An average increase in the consumption of practically all petroleum products.

Greater efficiency in refinery operation.

Lowering of crude costs to many refiners through the reduction or elimination of premium paying.

Conservatism in adding new wholesale and distributing facilities with the greatest expansion among the major marketing companies.

More attention paid to the vital statistics of the industry.

More flexible long time contracts to avoid wide differences with current prices.

Enlarged utilization of the heavier ends of petroleum, both for fuel and motor.

Stocks of gasoline, the product upon which the refiner's and marketer's prosperity still largely depends, were excessive at the beginning of the year and so, despite the fact that consumption was greater than was expected, the refiners were unable to advance their prices in line with the increasing crude costs. Although crude prices later declined it cannot be said that the normal and fair relationship between gasoline prices at the refinery and crude was ever obtained during the entire year.

The following data will serve to point out this condition and furnish proof of the contention that regardless of who was responsible for the deplorable conditions of the year 1923, the refiner and not the producer or marketer of crude oil suffered the most.

	Av. Price Ok. Crude 35° to 36.9° Grav.	Av. Price Chi. Gas. Tank Wagon	Av. Price Gp. 3 New Navy Gasoline (Okla.)
	Bbl.	Gal.	Gal.
1922	$1.825	20.2c	14.4c
1923	1.556	16.9	9.78
	.369	3.3	4.62
1st Half 1922	2.00	20.5	15.64
1st Half 1923	1.774	19.53	12.32
	.226	.97	3.32
Last Half 1922	1.653	19.9	13.2
Last Half 1923	1.341	14.3	7.26
	.312	5.6	5.94

What Figures Mean

Although these data apply to only a part of the total producing, refining and marketing area it does approximate a general situation for 1923. It shows that for the entire year while crude oil was only reduced 36.9 cents per barrel in price and the tank wagon gasoline price only 3.3 cents per gallon the total price slump in gasoline at the refinery was 4.62 cents. This situation is even more apparent when the first six months of the two years are considered. For the first half of 1923 the producer received 22.6 cents per barrel less than he did for the first half of 1922, the jobber of gasoline for the same period secured within less than 1 cent a gallon of the 1922 price but the price at the refinery slumped 3.32 cents. This situation was remedied in part the latter half of the two years when the tank wagon and refinery prices suffered approximately the same price reduction. When crude, refinery and tank wagon prices are compared for other areas for the two years it will be found that approximately the same situation applied.

It might be contended that these comparisons do not give a fair representation of actual conditions in that they do not take into consideration the price obtained by the refiner for other products. In this connection attention is called to the two-page table of this issue giving the low weekly quotations as carried in The Oil and Gas Journal during 1923, covering representative products scattered throughout the United States. These tables also give the average weekly price for the year, and the first and second halves of the year. These tables show that products other than gasolines, with the exception of neutrals and wax, showed a price decline during the year. This decline was at least as great as that of crude and serves to emphasize the heavy loss of the refiner in gasoline, the product upon which he is most dependent in the profitable operation of his plant.

Gasoline Price Wars

These same figures could be used to explain several other developments of the past year. The fact that gasoline tank wagon prices the first seven or eight months of the year did not decline so rapidly as the price at the refinery accounts for the "gasoline price wars" which were common the latter part of the summer and early fall in several consuming centers. The exceptionally wide margins between the refinery and tank wagon prices not only is responsible for the price cutting campaigns in which both the refiner and jobber suffered, but also attracted many new concerns to the marketing end of the oil industry, a division already over built at most points. This unwarranted expansion in facilities for the wholesaling and retailing of refined products, especially gasolines, was not the least of the evils which developed during the past year and the real significance of which will probably be realized this year. With the wide margins a thing of the past since early fall many of the newcomers have already realized the folly of their venture while many of the older jobbing concerns have cause to regret their completed programs of expansion.

Bulk and Filling Stations

Granting that the present normal margins for the marketing of refined products continues throughout the year it is probable that the newer concerns will be taken over by those who were more conservative in their operations. In this connection the latter part of the year 1923 saw the entry of several of the larger refineries into the distributing end of the business. It is known that others are contemplating similar action. This is also a development of conditions during the past year. The wide margins for the distribution of the products which they manufacture and the difficulty they experienced in finding a market at times has caused many refiners to plan their own marketing organizations. These refiners are coming to believe that the hazards incident to refining will be greatly reduced if they provide through their own bulk and filling stations for the distribution of a large part or the whole of their gasoline and kerosene output.

Due to this fact it has been often predicted during the past few months that the year 1924 will see less expansion on the part of the strictly independent jobbing concerns with new competition from the refiners either already engaged in the business or the new entrants. Among the former it is known that the several Standard distributing units for 1924 are planning to carry out their usual expansion programs. Such concerns as the Cities Service, Pure, White Eagle, Roxana, Sinclair, Skelly, Texas, Producers & Refiners, Gulf, and several other major companies, may be expected to increase their wholesale and retail distributing facilities to more nearly care for their crude production and refinery output.

Other Causes

Returning to the causes which brought the unfavorable year of 1923 to the refiner the seeker of information finds varying opinions. The scramble for crude early in the year and the large refinery output in the face of heavy stocks have been mentioned. Other reasons advanced include the flood of California crude and refined products, placing crude on a gravity basis in several important light oil fields, cracking processes and marginal contracts in the sale of gasoline. Although it is difficult for many students of conditions to see what connection some of these factors had with the debacle of the past year all of them have been presented in discussions by those engaged in the oil business.

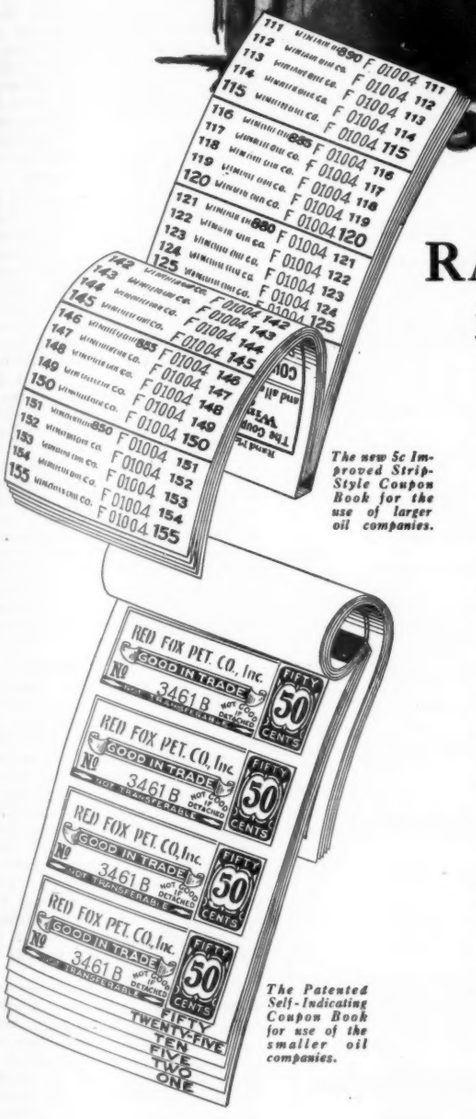
California

The California situation has been so widely discussed as to require little comment here. It is sufficient to state that the year 1923 conclusively proved that no field production or refinery output is so remote in the United States that it cannot become a seriously disturbing factor in the crude and refined markets of the entire world when it produces more than its own section can consume.

Elsewhere in this issue will be found the reports covering crude production and refinery output for the West Coast, which show the increases over 1922. Gasoline output increased from 693,497,748 gallons in 1922 to 1,283,200,165 gallons in 1923 with large increases in all other refined products.

Perhaps this increase can best be visualized by percentages showing the increasing importance of California refineries when compared to the entire output of the United States. In December 1922 the California plants produced 10.9 per cent of the entire gasoline output, 6.3 per cent of the kerosene and 31 per cent of the gas and fuel oils. This output was increased so rapidly that, despite the enlarged output of other areas, by July the California plants were producing 19 per cent of the gasoline, 8.6 per cent of the kerosene and 36 per cent of the fuel and gas oils. In addition to this large increase in refinery output there were the constantly mounting surplus crude shipments to refineries along the Atlantic Seaboard, Gulf Coast and even in Mexico.

The market importance of this development lies in the fact that this increase represented crude and refined products in excess of the consumption requirements of the West Coast. It



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meant that while hitherto California was hardly able to produce and refine sufficient crude for its own requirements it now had a surplus for which new markets had to be found. Other producing and refining areas in preparation for a big year had also increased their production and refinery output and were well prepared to take care of the increased consumption in the sections in which they were accustomed to market their output. But markets had to be found for the flood of California oil and with the world's consumption requirements already largely provided for it was inevitable that the prices should break. Never before in the history of the industry was there such a breaking up of marketing areas. Refiners along the Atlantic Seaboard with their own trade taken from them by the cheaper California products sought new buyers in the Middle West and other points at the expense of the refiners located there and in the Mid-Continent region. Before the scramble was ended in many instances gasoline and other refined products produced in every refining area of the United States were often found competing at the same consuming point.

Before the year ended this situation began to right itself and at this writing every indication points to a return to near normal conditions. There will be a surplus of California crude and refined products for some time to come but since it will be needed to offset the decline in other fields and the increased consumption requirements it is speedily ceasing to be a disturber of markets.

Cracking Processes

The year 1923 brought a larger number of installations of the so-called cracking processes than any previous year in the history of the industry. This was due to the fact that litigation centering around the patents right had been cleared up partially through agreements by the owners of several patents which made several efficient processes available to any refiner who might care to make them a part of his plant equipment. Refiners during the latter part of 1922 and the early part of 1923 felt that market conditions would require the operation of their plants to secure a maximum gasoline recovery. With the break in the gasoline market the need of these processes was not so apparent but many installations were made including several at the plants of the independent refiners.

A low gasoline market and a flood of cheap crude are not favorable for the testing out of the value of these cracking processes. But despite this fact the experience of refiners who have installed them has been uniformly satisfactory where equipment suited to their requirements was purchased. With both crude oil and gasoline rapidly advancing in price it now appears that the coming year will see even more attention paid to plant operation with a demand not only for cracking processes but every other device which makes for greater operating efficiency.

Crude on Gravity Basis

The year 1923 was also a poor year to determine the full effect of buying on a gravity basis. This plan was inaugurated in the Mid-Continent area late in 1922 at a time when there was a strong demand for the high gravity crudes in order to secure a maximum gasoline recovery. This situation early in 1923 reversed itself with a flood of crude and low gasoline prices. Due to this situation the Prairie Oil & Gas Co., in Oklahoma, Kansas and North Texas in September reduced its schedule of five gravities to three and similar action was tken by a large number of other major purchasing companies in the Mid-Continent, including the large buyers in Arkansas and North Louisiana. If the 1923 situation had been properly gauged it is probable that these major buyers would never have started buying crude on a gravity basis. During the proration period crude sold with little or no regard to its gravity by the smaller buyers.

However, as has been previously pointed out, conditions within both the crude and refined markets are rapidly changing and the fact that the major purchasers in Oklahoma, North Texas and Kansas have increased their schedule from three to four schedules with the largest advance coming in the higher gravity crudes indicates that they have already sensed this situation.

It can be said that the refining industry, despite the conditions of the past year, has come to realize that buying crude on a gravity basis adds to its problems. For the refiner who buys his crude supplies it probably means the doing away with the old custom of premium paying. When crude was sold on a flat basis the refiner could afford to pay the premium on the higher gravities due to their greater value in gasoline recovery.

But the new schedules as posted by the major purchasers take into consideration this difference in values and it follows that refiners cannot afford to pay large premiums. It is probable that this situation will be more generally appreciated within the next few months.

Marginal Contracts

The fact that New Navy gasoline sold by refiners operating in the Mid-Continent Field to jobbers in the Middle West under 4½ cents a gallon during the year has been mentioned. This was 1½ cents under the lowest open market quotation for the same gasoline. Although the marginal contract basis was under the spot market for a period of several weeks when the 4½-cent price existed, the marginal contract basis for the entire year was higher. For the year 1923 the Chicago gasoline tank wagon price averaged 16.8 cents and the open market quotation on New Navy gasoline (Group 3) averaged 9.78 cents. Figuring a 4½-cent margin and a freight rate of 2.376 cents per gallon, it will be seen that the marginal contracts netted the refiner 10.024 cents. The same comparison for the first half of the year shows that the marginal contract basis netted the refiner 12.654 cents, while the open market average was 12.32 cents. For the past six months the marginal contracts netted 7.424 cents and the open market 7.26 cents.

Not all contracts provided a 4½-cent margin with the average probably under that figure. Further the Chicago tank wagon is not the basis of these contracts. However, the figures do give the relative price situation between the marginal contracts and the open market. Despite the higher marginal contract price it cannot be said that refiners generally are enthusiastic about these contracts while many jobbers were dissatisfied due to the fact that for a period of several months in the Middle Western States, there was an advantage of from 1 to 5 points in favor of the spot market.

Many jobbers because of this situation violated their contracts with refiners resulting in losses to them. Contracts have been renewed however, for the year 1924, with the margin allowed the jobbers probably exceeding last year.

The agitation is becoming stronger for a flexible contract which will guard against the wide differences between the marginal contract basis and the open market which often exists for short periods and which during the past year extended over a period of several months at one time in favor of the refiner and the remainder of it in favor of the jobber. Some new contracts have been made providing this flexible feature and the results obtained during 1924 will be awaited with interest by the entire refining and marketing fraternity.

Statistical Showing

Many of the trade account for the disaster of 1923 as being due to a lack of information regarding the vital statistics of the industry, especially to that division covering the production, consumption and stocks of refined products. More attention is being paid to the gathering and interpretation of these data. Refiners have come to realize how fatal it is to judge the operations of other plants by their own with an appreciation that the best interests of all require timely data covering the entire industry. In the Mid-Continent Field the Western Petroleum Refiners Association for several months has been collecting and sending out to its membership weekly reports covering refinery operations in Oklahoma, Kansas, North Louisiana, North Texas and Arkansas. Other associations are preparing to take similar action. These data, coupled with those compiled by trade publications and other agencies, unquestionably will in the future play an important part in avoiding periods of distress like that of 1923.

Other Developments

There are many other factors in the refining and marketing of refined products which might be discussed. In the marketing end probably the most important development of the year was the increased use of distillates as fuel for homes and other small buildings. Some of the largest companies are behind this movement and by educating the consumer and encouraging the manufacturer of burner equipment great strides have been made in the more profitable utilization of the heavier ends of crude petroleum. Some of the larger companies are to manufacture their own burning equipment, supervise the installations and furnish the oil.

There is still a long distance to go before the fuel possibiities of crude are fully realized but the start has been made, the American Petroleum Institute and other trade associations are taking an active interest and the coming year should see an increased consumption which will add to the profits of all branches of the industry.

AVERAGE PRICES ON REFINED PRODUCTS

	Av. Price 1st 6 mos. of year	Av. Price 2d 6 mos. of year	Av. Price for the year
Gasoline and Naphtha, Oklahoma (Group 3)—			
50-52, 450 end point	$0.11.64	$0.06.82	$0.09.23
56-58, 450 end point	.11.78	.06 99	.09.39
58-60, 437 (New Navy)	.12.32	.07.26	.09.78
60-62, 400 (New Navy)	.13.88	.08.80	.11.34
64-66, 375 (New Navy)	.14.93	.09.84	.12.38
68-70, 350-365 (New Navy)	.16.03	.11.17	.17.60
Kansas—			
58-60, 437 (New Navy)	.12.59	.07.51	.10.00
North Texas—			
50-52, 456 (New Navy)	.11.59	.06.85	.09.22
58-60, 437 (New Navy)	.12.28	.07.16	.09.65
64-66, 390 (New Navy)	.14.61	.09.47	.12.04
Pennsylvania—			
52 naphtha	.14.61	.10.58	.12.57
58 gasoline	.15.53	.11.51	.13.52
60 gasoline	.16.43	.12 81	.14.30
64 gasoline	.18.83	.14.81	.16.83
68-70 gasoline	.22.54	.14.28	.20.41
Natural Gasoline—			
Grade A, 72-78 under 375 e. p., rec. 90%	.11.44	.06.82	.09.13
Grade B, 76-82, 375 e. p., rec. 85%	.11.01	.06.48	.08.75
Grade C, 80-85, 350 e. p., rec. 78%	.10.32	.06.15	.08.23
North Texas—			
72-76 absorption	.11.00	.06.71	.08.85
80-84 compression	.10.38	.06.20	.08 29
Motor Natural Gasoline (Blend), Oklahoma—			
60-62, 450 end point	.11.34	.06.69	.09.01
68-70, 430-435 end point	.11.42	.06.86	.09.16
Burning Oil, Oklahoma—			
41-43 water white kerosene	.04.12	.03.93	.04.00
42-43 water white kerosene	.04.33	.04.15	.04.24
Kansas—			
41-43 water white kerosene	.04.40	.04.32	.04.36
North Texas—			
41-43 water white kerosene	.03.92	.03.81	.03 86
Pennsylvania—			
43 kerosene prime white	.06.80	.06.24	.06.52
45 kerosene water white	.07.17	.06.51	.06.84
Fuel Oils—			
20-22 (El Dorado)	.84.80	.74.30	.79.55
Kansas—			
24-26 fuel oil	1.09.20	1.00.00	1.04.06
36-38 distillate	.03.38	.03.10	.03.24
Oklahoma—			
24-26 fuel oil	1.03.68	.86.54	.95 11
32-36 gas oil	.02.98	.02.35	.02.66
38-40 straw distillate	.03.32	.02.78	.03.05
North Texas—			
24-26 fuel oil	1.00.60	.77.30	.87.95
32-36 gas oil	.02.74	.02.36	.02.55
38-40 straw distillate	.03.03	.02.82	.02.96
North Louisiana—			
Fuel oil	1.06.00	.77.11	.92 10
Gulf Coast—			
Gas oil	.04.67	.03.33	.04.00
Fuel oil	1.54.93	1.23.00	1.36.96
Pennsylvania—			
30°-34° fuel oil, gal.	.05.70	.04.98	.05.40
36°-40° fuel oil, gal.	.05.94	.05.25	.05.60
34° neutral, gal.	.08.69	.07.50	.08.09
Neutral Oils, Oklahoma—			
100 vis., 3 color, 20-25 cold test	.06.67	.05.26	.06.06
150 vis., 3 color, 23-28 cold test	.12.21	.12.77	.12.49
200 vis., 3 color, 23-28 cold test	.12.80	.13.55	.13.17
150 vis., 5 color, 23-28 cold test	.10.80	.11.27	.11.03
200 vis., 5 color, 23-28 cold test	.11.54	.12.05	.11.75
240 vis., 5 color, 25-30 cold test	.13.30	.14.05	.13.67
590-600 bright stock	.26.80	.24.04	.26 42
124-126 white crude scale wax	.02.42	.02.65	.02.54
Pennsylvania—			
200, 3 color	.30.50	.27.03	.28.77
600 Pennsylvania flash	.19.22	.16.34	.17.80
Pennsylvania bright stock	.25.83	.30.92	.33.37
Gulf Coast—			
No. 3 color, 200 vis., pale oil	.12.25	.10.70	.11.47
No. 5 color, 200 vis., red	.10.18	.09.40	.09.79
New York Domestic Market—			
Gasoline, bulk delivered at New York	.17.26	.10.51	.13.88
Cylinder, extra light filtered	.39.21	.37.34	.38.23
Cylinder, bright stock	.46.56	.44.52	.45.52
Paraffin, 903 specific gravity	.24.16	.23.62	.23.89
Bunker oil, 14 plus delivered in barges, bbl.	1.62.20	1.51.60	1.56.90
Diesel oil at refinery, gal.	.04.46	.04 10	.04.28
120-122 a.m.p. wax	.03.17	.03.34	.03.25
New York Export Market—			
Motor gasoline in cases, gal.	.28.99	.25.83	.27 41
Motor gasoline, U. S. Navy	.15.68	.12.06	.13.87
Naphtha, 60° p. 59-61 spec. grav.	.18 18	.13.30	.15.74
Standard white kerosene in bulk, gal.	.06.66	.06.08	.06.36
Standard white in barrels, gal.	.13.14	.13.08	.13.12
Standard white in cases	.16 14	.16.19	.16.06
Water white in bulk	.07.54	.07.00	.07.27
Water white in barrels	.14.22	.14.08	.14.15
Water white in cases	.17.22	.17.06	.17.14

NEW REFINERY FOR SAYRE

SAYRE, Okla., Jan. 28.—The Sayre Refining Co., a new organization with a capital stock of $100,000, has purchased an abandoned oil refinery at Chickasha and will reinstall it west of the river near the Rock Island railroad track in the Tack addition to Sayre. Workmen are tearing down the plant at Chickasha. A. F. Vandersall is president of the Sayre company and Howard Jarvis is secretary-treasurer. Contracts for crude oil produced in the Sayre Field are said to have been secured and the plant will operate at 1,000 bbls. capacity when that amount of oil is available.

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Teapot Dome Lease Fair to Government, Says Director Braley

KANSAS CITY, Mo., Jan. 28.—Charles A. Braley, of Kansas City, who became a director in the Sinclair Consolidated Oil Corp. soon after the original organization, says that corporation had nothing to do with the lease of the Teapot Dome to the Mammoth Oil Co. At the same time Mr. Braley defended the lease as a good one for the Government, irrespective of how it was obtained.

"Negotiation of the deal," he added, "was a personal or private move by parties who had been interested in other corporations that the Sinclair Consolidated Oil Corp. The latter company, however, within the last year, has acquired one-quarter of the stock in the Mammoth Oil Co. It has no stock whatever in the Hyva Corporation.

"It is my firm belief, and I have been in the oil business 20 years, that the Government could not have got as good a contract from any company that would have been willing to build a pipe line from the Casper region to the Mid-Continent Field, giving the oil that came from the Government lands an outlet to the ocean and to the Mid-Continent Field.

"Everyone acquainted with the industry knows oil and gas travel through a field underneath the surface of the earth, and while geologists may be able to determine with some definite degree where an anticline or sincline exists, no geologist or no person living today can determine whether or not there would not be a drainage of gas and oil between two adjoining fields, at a depth of 2,500 to 3,500 feet beneath the surface.

"If the Teapot Dome had been thrown open to the public for exploitation, the Government could not have obtained what it desired—fuel oil for years to come, delivered at the various seaports in the United States, at a known price.

"Everyone well knows that if the Teapot Dome should produce the oil it is alleged it may produce, and there were no pipe lines to take away that oil, there would be an overproduction, in the Casper Field, reducing the price of that oil much below what the Government will be able to get for its royalty oil with a pipe line constructed as is guaranteed by its contract, and with the price of that oil as determined by the contract.

"If the question is fully gone into as to whether the contract was or was not a good one for the Government to make (irrespective of how the contract was obtained, of which I know nothing), it will no doubt be determined by any business man or any oil man that the Government will, in the long run, be much better off than it would have been had it thrown the domain open for public drilling. In addition it secured for the navy what it greatly desired, plenty of fuel oil at points on the Sea Coast where it is needed by the Navy.

"There is no doubt among real producers of oil, the Government's decision to make a lease, when it did, was a wise conclusion, unless the Government desired to go into the production of oil itself, because there was great danger and a reasonable probability that if the Teapot Dome territory was not, at once, developed by someone, it might lose much of its oil to those holding lands in the adjoining field, known as the Salt Creek basin."

EASTERN FIELDS

(Continued from Page 68)

Hooper farm. In Grant district, Preskett Racer has a light pumper in the Cow Run sand on the B. E. Crippen farm. In Harper district, Roane County, the Ohio Fuel Oil Co. is drilling its No. 4 on the S. D. Gibson farm to the Big Injun sand.

Duster in Otter County

In Otter district, Braxton County, the Philadelphia Oil Co.'s test on the G. W. Whitesell farm is dry in the Big Injun sand. The same company has drilled to 2,175 feet on the T. R. Stump farm and shut down. In Union district, Harrison County, the same company has a fifth sand gasser on the Mary L. Young farm. In Union district, Tyler County, Schlagel & Freid drilled through the Big Injun sand at No. 18 on the J. R. Wells farm and found it barren. They got a light show of oil in the Maxon sand. In the same district, S. A. McCullough's test on the H. C. Williamson farm is dry in all sands. McCall & Co. got a duster in the Big Injun sand on the Ellen Carr farm, in Troy district, Gilmer County. It has been abandoned.

Drilling and Starting Tests

In the West Virginia fields there is quite a little test work under way. Some few are wildcats quite a distance in advance of production. On Price's branch of Little Coal River, Scott district, Boone County, the South Penn Oil Co. started to drill a test on the Sidney White farm. On Big Coal River, Washington district. Kanawha County, the same company is drilling on the Cassingham-Stinner farm. In the town of Clendenin, Big Sandy district, Kanawha County, the United Fuel Gas Co. started to drill on the Fred Huffman lot. On Fulls fork of Reedy Creek, Reedy district, Wirt County, Joseph Richardson & Co. started to drill on the S. B. Young farm.

Ritchie County Tests

In Union district, Ritchie County, the Carnegie Natural Gas Co. has a rig up on the Della Summerville farm. The same company has rig material at a location on the S. M. Tharp farm. In Clay district, J. B. Yates & Co. have made a location on the I. Doak farm. In Grant district, David French & Co. have rigged up to drill on the J. M. Cassidy farm. In Murphy district, the Chemical Oil Co. has rig timbers and tools at a location on the D. M. Nutter farm. In Union district, McCall & Co. started to drill on the E. B. McDonald 24 acres. In the same district, Ira Cox is due in the Big Injun sand on the J. H. Cool heirs' farm. McCall & Co. are due in the salt sand at a second test on the Rosie Wilson farm, in Center district, Gilmer County. In the same district, the Carnegie Natural Gas Co. has rig material at a location on the Roswell Miller farm. In Glenville district, the Hope Natural Gas Co. started to drill on the S. E. Hays farm. In Sheridan district, Calhoun County, L. B. Corroll has a rig up on the S. K. Wolverton farm. In Center district, G. L. Cabot is drilling on the A. G. Matthews farm. The Fairmont Gas Co. is due in the Gordon sand on the Dewey Brock farm, in London district, Marion County. The Null Gas Co. is drilling on the Niptune heirs' farm.

Harrison County

In Clay district, Harrison County, the Lumberport Gas Co. has started to drill on the Lowe heirs' farm. In West Union district, Doddridge County, the Carnegie Natural Gas Co. started to drill on the Martha Frum farm. In Central district, the Hope Natural Gas Co. shut down to repair the rig on the Marl Smith farm. In the same district the Cabin Run Oil & Gas Co. is hauling rig material to the J. C. Wise farm. In Southwest district, the Beulah Oil & Gas Co. started to drill on the John Gray heirs' farm. In Union district, Ritchie County, the Star Oil & Gas Co. is rigging up at a second test on the Ida B. Bode farm. In Troy district, Gilmore County, the same company is hauling rig timbers to a location on the S. B. Wiesman farm. In Slin Creek district, Lewis County, the Re Oil & Gas Co. has a rig up on the T. P. Laugh farm. In Walker district, Wood County, Rexroad & Davis shut down on the J. W. Marshall farm. S. A. McCullough is drilling on the C. F. Flesher farm, in Meade district, Tyler County. In Paw-Paw district, Marion County, the Victor Oil Co. is building a rig on the Isaac Coogle farm. In Center district, Wetzel County, the Hope Natural Gas Co. is hauling tools to a location on the J. K. Long farm. In Clay district, the Manufacturers Light & Heat Co. started to drill on the C. Barger and K. Grosgray farms. In Liberty district, Marshall County, the same company is building a rig on the August Wendt farm.

Southwestern Ohio

The deep sand territory in southeastern Ohio made a poor showing during the week. There were not many completions and only a few light oil producers. In Section 26, Rush Creek Township, Fairfield County, the Blum Oil & Gas Co. completed a test on the John McCandlish farm. It got no oil and only a fair gas pressure in the Clinton sand. This location is 1,800 feet northwest of the test on the Edson B. McCullough farm. In Section 10, the Montana Oil & Gas Co. drilled a test on the S. D. Nixon farm through the Clinton sand, a duster located 800 feet southeast of production. In Fractional Section No. 30, Brown Township, Vinton County, the Pure Oil Co. drilled a test on the Ohio Mineral Land Co.'s property through the Berea grit, showing very little oil. It is undecided as to giving it a test or drill deeper. On Lot 15, Hanover Township, Licking County, W. W. & A. T. Wehrle's test on the A. F. Francis farm is a duster. In Hopewell Township, the Carter Oil Co. made a location and is hauling a rig for a test on the William T. McTurf farm. In Hanover Township, the same company is drilling a test on the L. & L. Settles farm. In Lot 12, Franklin Township, C. E. Saltzbager, Son & Co. completed No. 3 on the J. W. Motherpaw farm, a light pumper in the Berea grit.

Light Producer in Muskingum

In Section 2, Harrison Township, Muskingum County, the Carter Oil Co. completed a second test on the C. L. & R. R. Burt farm, good for 3 bbls. a day in the Berea grit. In Section 18, Aurelius Township, Washington County, John Allhouse drilled a test on the Atkinson heirs' farm through the Macksburg 500-foot sand, showing for a very light pumper. In Section 8, Wayne Township, Monroe County, Highman & Co.'s second test on the S. E. Highman farm is a 5-bbl. pumper in the Big Lime formation. In Rush Creek Township, Fairfield County, Louis Ruff & Sons started to drill a test on the Milton Larimer farm. In the same township, the Carter Oil Co. spudded in No. 8 on the H. Clay Weaver farm.

Southwestern Pennsylvania

Southwest Pennsylvania completed more than the usual number of wells, but none of any importance. In Moon Township, Allegheny County, the Squaw Oil & Gas Co. has drilled its test on the William McKee farm through the fourth sand, a duster. In the Cliff Mines district, Robinson Township, the Arbuthnot Oil Co. drilled a test on the Jacob Siltee farm through the fifth sand and dry. In Moon Township, 3 miles southeast of the old Gringo Pool, the Moon Oil & Gas Co. has a light gasser in the fourth sand at a test on the A. Shaffer farm.

In Perry Township, Greene County, the Fox Oil & Gas Co. completed in the Big Injun sand a test on the Charles Lemley heirs' farm, a gasser good for 3,000,000 feet a day. In Aleppo Township, the Big Five Oil & Gas Co.'s test on the J. Whipkey farm did not get enough oil or gas to make it worth while to test. In Springhill Township, Patterson & Co.'s test on the J. E. Snider farm is a gasser in the fifth sand. In the same township, the Carnegie Natural Gas Co.'s second test on the G. W. Plants farm is a gasser in the Big Injun sand. In Morris Township, the Greensboro Gas Co.'s test on the R. S. Huffman farm is dry in all sands and abandoned. In Richhill Township, the Manufacturers Light & Heat Co.'s test on the Charles Henry farm in a gasser in the Gordon sand.

FALLING SUPPLY OF NATURAL GAS PROBLEM FOR MUTUAL CONFERENCE

By Christy Payne

(President Peoples Natural Gas Co.)

The obstacle to a concord between the United States and Russia lies in the fact that there is no common rule by which rights may be measured; if fundamental views on personal liberty, private property, sanctity of contract, a personal God, and the ministry of State and Church, differ, men cannot sit around a table and agree on anything; they are bound to disagree.

Christy Payne

In our country, grievances and misunderstandings usually disappear when reasonable men with the same common measure of what is right and what is wrong, get together and talk things over. We of the natural gas industry are engaged in one of the most honorable business enterprises contributing to the welfare of mankind; the wealth of the nation is increased by our activities and at the same time, comfort to the individual and the community is promoted. In this situation, one of the duties which we owe to the public depending on our resources, is to make it acquainted with the facts concerning the supply of natural gas and the efforts that are necessary to prolong the useful life of gas service; no one wants to substitute coal in any appliance where gas has been the convenient and favored fuel.

In answer to your invitation to send some message to the industry, my thought is along the line that as the supply of natural gas falls below the requirements of consumers, there is a mutual problem to be worked out by men of public interest sitting together with gas men around the conference table; it is the task of the representatives of each community to determine what shall be the best policy for that community to get the greatest good out of the remaining supply of this greatest fuel.

Here's a Pump for Gasoline or Tar with a Lifetime of Use Without Repair

ROOTS Rotary Pumps are of the positive displacement type. In pumping gasoline any vapor generated in the transfer lines is forced on instead of being compressed in the pump case. If the pump is handling tar, this same principle insures a flow through the lines to their full capacity.

Refining engineers have found **ROOTS Rotary Pumps** adaptable for pumping every petroleum product from gasoline to tar.

The absence of small moving parts and contact surfaces within the case makes internal lubrication unnecessary. The only wearing parts about a **ROOTS Pump** are the bearings, and these are adjustable while the machine is operating.

Continuous operation without danger of shutdown is an actual fact with **ROOTS Rotary Pumps.**

We are in position to make prompt shipments now so that pumps can be installed for the heavy production period coming.

The cost per year for operating **ROOTS Rotary Pumps** is lower than with any other type. Power consumed is in direct proportion to speed at which the pump is operated. Power can be furnished by direct connected steam engine, belt drive, or motor. For belt drive, light and loose pulleys can be supplied so that a battery of pumps can be driven from the same line shaft.

If the pump you require is not listed in the table below, write us for quotations on pumps that will exactly meet your needs.

Table of Sizes, Roots Rotary Pumps

"High Lift" Pumps, 80 to 200-foot Head

No.	Gallons per Revolution	Revolutions and Gallons per Minute Suction Lift in Feet						Pipe Connections		Diameter Gears, Inches	Weight in Pounds	Size Shaft in Bearings	Over All Dimensions			Code Word for Price
		Over 14 Feet		6 to 14 Feet		0 to 6 Feet		Diameter Suction	Diameter Discharge				Length in Inches	Width in Inches	Height in Inches	
		Rev.	Gal.	Rev.	Gal.	Rev.	Gal.									
½	52	250	130	425	221	500	260	5	4	5	1000	2	45½	18½	43¾	Coupe
1	1 12	200	224	330	370	400	448	6	5	6½	2500	2⅜	56½	26¾	68	Couple
2	2 62	175	458	250	655	325	851	8	6	8½	5500	3⅛	68	30¾	71	Courage
3	4 22	150	633	215	907	275	1160	10	8	10	7100	3¼	80¼	34½	87	Courier
4	7 32	125	916	180	1317	230	1683	12	10	12	10500	4⅝	92	42½	98	Court
5	11 66	105	1225	155	1807	200	2332	14	12	14	12500	5¼	103	48½	106¼	Cousin
6	17 28	90	1555	135	2333	170	2937	16	14	16	22000	6¼	119	56	114	Covenant
7	33 8	75	2535	110	3718	140	4732	20	16	20	37000	7⅞	135¾	68	117	Covering
8	58 3	65	3789	90	5247	120	6996	24	20	24	45000	9	148½	82	142	Conrad
9	82 9	55	4560	80	6632	105	8705	28	24	27	60000	10	167	92	148	Coyness
10	114	45	5130	70	7980	95	10830	32	28	30	80000	11	182	104½	154	Coyful
11	197	40	7880	60	11820	85	16745	38	32	36	110000	12¼	223	122	172	Cosy

A valuable book of engineering tables will be sent free on request. Ask for Bulletin O-118

The P. H. & F. M. ROOTS CO.

CHICAGO
Peoples Gas Building

CONNERSVILLE, INDIANA

NEW YORK
120 Liberty Street

OKLAHOMA FIELDS

(Continued from Page 54)

Pennok Oil Co.	26	1,501
Phillips Petroleum Co.	4	533
Prairie Oil & Gas Co.	13	902
Sinclair Oil & Gas Co.	1	15
Slick-Comar Oil Co.	31	2,796
Southwestern Pet. Co.	14	869
The Texas Co.	5	56
White Eagle Oil & Ref. Co.	7	629
Total	619	39,887
Total last week	616	42,399
Difference	3	2,512

Daily average pipe line runs were as follows:

Kay County Gas Co., 17,612 bbls.; Ozark Pipe Line Co., 8,875 bbls.; Gulf Pipe Line Co., 5,077 bbls.; Bolene Refining Co., 2,698 bbls.; Champlin Refining Co., 3,089 bbls.; Empire Pipe Line Co., 980 bbls.; Prairie Pipe Line Co., 902 bbls.; Oklahoma Pipe Line Co., 305 bbls.; Enid Oil & Pipe Line Co., 343 bbls.; to lease storage, 6 bbls. Total, 39,887 bbls.

Burbank Extension

In the Burbank extension, The Texas Co. had a rig on the ground for No. 5 Munroe, NE cor. SE SW, Section 3-27-5, and also for No. 6 Munroe, C SE NE SW, same section. Rigs were also on the ground for the Sinclair Oil & Gas Co.'s No. 3 Woods, CEL NE SE SW, Section 9-27-5, and for No. 4 Woods, CEL SE NE SW, same section. The Phillips Petroleum Co. was building a rig for its No. 4 Rhodes, CSL SW SE SE, same section, and had a rig on the ground for its No. 5 Rhodes, one location to the east. The Cosden Oil & Gas Co. had rigs in place for No. 8 Sands, CNL NE NW NW, Section 10-27-5, and for No. 9 Sands, CNL NW NE NW, same section, and was rigging up No. 2 Sands, CSL SW SE NW, same section. The Carter Oil Co. was spudding its No. 4 Clubb, NE cor. SE SW, Section 10-27-5, and the Phillips Petroleum Co. and Delmar Oil Co. were also spudding their No. 4, CWL SW NW SE, same section. The same company was spudding two other wells, No. 5, CWL NW SW SE, and No. 6, NE cor. SE, and was building the rig for No. 7, CEL SE NE SE, same section.

The Sinclair Oil & Gas Co. was spudding its No. 10, CEL NE SE NE, Secton 15-27-5, Osage County, at 150 feet, and had staked a location for No. 15, C SW NE NE, same section. The Twin State Oil Co. was rebuilding the rig which was burned recently on its No. 8 McCassey, CEL SE NE NW, Section 15-27-5, Kay County, with total depth of hole at 1,800 feet. The Pure Oil Co. was drilling at 175 feet in its No. 4 McCassey, CNL NW NE NE, Section 15-27-5.

The Tidal-Osage Oil Co. was rigging up on its No. 15, C NW SE SW, Section 6-26-6, with depth of hole at 2,811 feet. The same company was spudding its No. 17, CNL NE NE SW, Section 34-22-10, a twin to its No. 3.

A rig was on the ground and cellar was dug for the Phillips Petroleum Co.'s No. 8 Cooper, SW cor. SE NW, Section 3-27-5. The Carter Oil Co. was building a rig for its No. 2 Pappan, CSL SE SW NW, same section, and also for its No. 3 Pappan, C NW SW NW, same section.

The Texas Co. was pulling the big pipe with the 6-inch set at 2,697 feet and the 5-inch at 2,868 feet in its No. 2 Munroe, NW cor. SW, Section 3-27-5, Kay County, and had a rig on the ground for its No. 9 Munroe, CSL SE SW SW, same section. The same company had rigs on the ground for three other wells on the same lease, No. 10, CSL SW SE SW; No. 11, CNL NW NE SW; and No. 12, CNL NE NW SW.

The Roxana Petroleum Corp.'s No. 4 Pappan, NW cor. NE, Section 4-27-5, topped a sand at 1,085 feet but was carrying a hole full of water at 1,115 feet and was drilling ahead. The same company was building three rigs on the Pappan lease, No. 6, CEL NE SE NE; No. 7, NE cor. of the section; and No. 8, CSL SW SE NE.

The Phillips Petroleum Co. staked a location for its No. 6 Rhodes, CWL NW SW SE, Section 9-27-5, and was moving in a rig.

North of the extension, the Waite Phillips Co. plugged No. 1 Auld, SE cor. Section 32-28-5, which was dry at 3,442 feet. The Prairie Oil & Gas Co. was building a rig for its No. 2 Morgan, SE cor. Section 33-28-5, and the Waite Phillips Co. was building a rig for an offset to it, No. 2 Cooper, SW cor. Section 34-28-5. Across the line in Osage County, the Carter Oil Co. was drilling at 340 feet in the No. 1, SW cor. SE, Section 34-28-5. The Douglas Oil Co. had a rig on the ground for its No. 1 Hardy, NE cor. NW NW, Section 9-28-4e.

Kay County

In the southwestern part of Kay County, the Besdor Oil Co.'s wildcat, No. 1 Chambers, SW cor. SE, Section 9-25-2w, was underreaming the 6-inch casing at 2,800 feet. Dance and others had a rig on the ground for their No. 1 Fairless, NE cor. NW SW, Section 26-26-1w. The Blackwell Oil & Gas Co. was drilling at 215 feet in its No. 1 Geiger, SE cor. NE, Section 9-27-1w.

Claire & Smith were drilling at 410 feet in their No. 1 Chestnut, SE cor. NE, Section 4-25-2w.

In the northern part of the county, the Vernon Oil & Gas Co. was rigging up a machine for its No. 1 Wilbur, CSL NW NW NE, Section 21-29-1e.

In the Tonkawa area, the Comar Oil Co. was cleaning out No. 9-A Clements, NW cor. SW NW, Section 34-25-1w, at 2,540 feet. The Pennok Oil Co. was cleaning out an old well, its No. 7-A Endicott, CNL NE SW SE, same section, preparing to deepen it. McCaskey & Wentz were fishing at 2,357 feet in their No. 22 McKee, CNL NE SW, same section.

The Comar Oil Co.'s No. 4 Endicott, NE cor. SW, Section 35-25-1w, was pumping salt water at 2,538 feet. On the Comar's Blubaugh lease, across the line in Noble County, in Section 2-24-1w, No. 23, CEL SW, was shut down waiting for cement to set at 2,445 feet; No. 1-A, NW cor. SE, an old well, was drilling out rock to straighten the hole at total depth of 2,161 feet; No. 5, C NW SE, cemented the 6-inch casing at 2,320 feet to shut off water (old well); No. 8, CSL NW SE, was drilling at 220 feet.

On the same company's Ellsworth lease in Section 2-24-1w, No. 8-A, SW cor. NE, was drilling by tools at 2,145 feet; No. 9-A, NW cor. SW NE, was drilling at 549 feet; No. 15, CSL NE, was spudding at 20 feet. On the Comar's Blubaugh lease, in the same section, No. 8-A, NE cor. SW, an old well was making 15 bbls. natural on the pump from sand at 2,097-99 feet; No. 10, CSL SE SW, was drilling by tools at 2,230 feet; No. 10-A, twin location, was drilling out cement at 2,605 feet; No. 22, CSL NE SW, was fishing for drill pipe at 2,405 feet.

The Comar Oil Co.'s No. 3-B Carmichael, NW cor. SW NE, Section 3-24-1w, was drilling up liner at 2,278 feet; No. 13-A Carmichael, CSL SE NE, same section, cemented the hole at 2,236 feet. The same company's No. 14-B Ruzek, CNL NW SE SE, Section 3-24-1w, was drilling at 845 feet. The same company's No. 1-A Oliver, NW cor. NE, Section 11-24-1w, was pumping 64 bbls. natural from sand at 2,578-90 feet, steel line measurement.

The Healdton Oil & Gas Co.'s No. 11-A Rence, CWL SW NW, Section 11-24-1w, was good for 125 bbls. natural from sand at 2,625-45 feet. The same company was straightreaming the 6-inch pipe at 2,060 feet in its No. 5-B Rence, NE cor. NW, Section 11-24-1w, and had shut down its No. 13-A Rence, C NE NW, same section, with the 8-inch pipe cemented at 2,048 feet.

The Marland Refining Co. and Cosden Oil & Gas Co.'s No. 1 School Land, NE cor. Section 16-24-1w, an old well, was dry and abandoned at 3,381 feet. The same interests were fishing in their No. 8 School Land, CSL SW SE, same section, for three joints of pipe which were shot off when 40 quarts were fired in sand at 1,985-90 feet.

The Champlin Refining Co. and Amerada Petroleum Corp. made a location for No. 2 Smithhilser, NE cor. Section 21-24-1w.

New Work in Wagoner

One fairly good well, a couple of small producers and a gasser enlivened the activities of Wagoner County, and these were supplemented by a certain amount of new work. Martin and others had all three of the oilers, their No. 1 Verner, NW cor. Section 15-17-16, having been good for 100 bbls. natural from sand at 805-20 feet. Their No. 2 Verner, CNL NW NW, same section, made 20 bbls. natural from sand at 810-25 feet, and No. 3 Verner, CEL NW NW, same section, was a 10-bbl. well in sand at 810-20 feet. Gravity in all three tested 37.5 degrees. The gas well was Z. Barnes' No. 1 Sarty, NW cor. SW, Section 32-17-16, and was good for 2,000,000 feet in sand at 1,187-1,201 feet.

Operations in Osage

A well estimated to be good for 100 bbls. on the swab was brought in as the result of a shot in sand at 2,405½-34 feet. Top of the sand was 2,391 feet and bottom 2,441 feet. The well was Seaman and others' No. 3, CSL SW NE, Section 3-25-8. Another well, estimated capable of making a 100-bbl. pumper was brought in by a 120-quart shot in sand at 1,114-41 feet, in The Texas Co.'s No. 3, SE cor. NE, Section 29-25-8. First oil was found at the former depth and the bottom of the hole was still in sand. It was being cleaned out.

The top of the Bartlesville sand was found at 1,706 feet in the Devonian Oil Co.'s No. 7, CSL NE NW, Section 34-25-11, and a 140-quart shot from 1,711 to 1,743 feet made a 10-bbl. producer. Total depth was 1,795 feet.

Gilliland & Steel abandoned their No. 4, CEL SE NE NE, Section 11-22-10, as dry at 2,248 feet. The Marland Refining Co. was drilling at 200 feet in its No. 1-B, NW cor. SE, Section 34-22-10. The Owen-Osage Oil Co. shut in its No. 269 as a gasser good for 1,000,000 feet in the Tucker sand at 1,533-57 feet. The top of the Bartlesville sand was found in this well at 1,462 feet.

A 275-bbl. producer was brought in by Markham & Breene in their No. 2, CWL SW SW NW, Section 23-21-10, after a 90-quart shot in the Peru sand at 1,630-51 feet.

Gasser in Pawnee

In Pawnee County, the Magnolia Petroleum Co. had a 12,000,000-foot gasser in its No. 1 Rimmer, NW cor. NE SW, Section 16-20-6, in sand at 2,803-24 feet. Another well was made into a 15-bbl. producer by a shot of 40-quarts in sand at 2,752-65 feet. It was Fulgate and others' No. 3 Alleman, CSL NE SE, Section 28-20-7.

In Stephens County, the Magnolia Petroleum Co.'s No. 3 Edwards, CWL NW NW, Section 20-1s-8w, was good for 10,000,000 feet of gas in sand at 2,076-86 feet. It was an old well. The Coline Oil Co.'s old well, No. 8 Harris, CEL SE NE, Section 25-1n-9w, was making 7,000,000 feet of gas from sand at 2,268-72 feet.

In Hewitt Area

In the Hewitt area, Carter County, the Coline Oil Co.'s No. 36-A Jones, CEL NW NE SW, Section 4-4s-2w, which was good for 300 bbls. initially, from sand at 2,495-2,555 feet, was shot with 30 quarts in sand at 2,495-2,520 feet, and with 15 quarts in sand at 2,545-55 feet and was averaging about 135 bbls. daily. Total depth was 2,673 feet. B. A. Simpson's No. 2-A Lowery, C SW SE NE, Section 9-4s-2w, was good for 420 bbls. in sand at 2,044-82 feet, and 2,101-10 feet. The Cotton Belt Petroleum Co. was drilling at 1,200 feet in its No. 10 Rexroat, CSL SW NW NW, Section 15-4s-2w. The Carter Oil Co.'s No. 19 Ward, C SE SW SE, Section 16-4s-2w, was estimated good for 75 bbls. in lime at 3,090-3,110 feet, and was shut down at 3,145 feet in shale. The same company's No. 20 Ward, C NE NW NE, Section 21-4s-2w, found the lime pay at 3,075-3,112 feet and flowed 760 bbls. in 18 hours before it was shut down and shut in. Baker & Strawn's No. 4-A Dillard, CSL SW NE NW, Section 22-4s-2w, was good for 30 bbls. from broken sands at 2,034-2,510 feet.

OPERATIONS OF MID-CONTINENT REFINERIES FOR THE YEAR 1923, AS SHOWN BY THE MONTHLY REPORT OF THE OIL AND GAS JOURNAL

	No of Plants	Capac.	Plants Op. 1st of mo.	Daily runs 1st of mo.
Oklahoma.	103	334,627	55	162,627
N. Texas.	62	195,800	33	94,300
Kansas ..	38	101,900	24	72,450
N. La. ...	19	38,850	5	19,800
Arkansas..	14	23,510	9	9,500
Total ..	236	694,687	126	344,377
Feb. 1, 1923:				
Oklahoma.	103	334,900	58	173,655
N. Texas.	63	198,300	30	64,900
Kansas ..	39	104,100	24	69,650
N. La. ...	19	38,350	5	15,800
Arkansas..	14	24,010	7	7,986
Total ..	238	699,660	124	331,991
March 1, 1923:				
Oklahoma.	103	335,300	65	176,675
N. Texas.	63	200,800	35	66,700
Kansas ..	38	104,800	24	68,250
N. La. ...	20	45,850	6	18,000
Arkansas..	14	24,010	9	11,965
Total ..	238	710,760	134	340,590
April 1, 1923:				
Oklahoma.	101	336,300	59	146,875
N. Texas.	60	195,200	33	61,900
Kansas ..	42	109,100	26	67,425
N. La. ...	20	46,850	6	18,000
Arkansas..	16	26,010	10	11,700
Total ..	239	713,460	133	294,400
May 1, 1923:				
Oklahoma.	102	351,100	56	144,810
N. Texas.	63	198,950	26	48,700
Kansas ..	41	110,500	27	71,470
N. La. ...	20	48,550	6	17,400
Arkansas..	15	26,010	9	10,550
Total ..	241	735,110	122	293,380
June 1, 1923:				
Oklahoma.	102	351,100	54	147,035
N. Texas.	63	198,950	34	61,750
Kansas ..	41	110,500	35	78,770
N. La. ...	20	48,550	9	18,900
Arkansas..	15	26,010	6	10,400
Total ..	241	735,110	132	312,655
July 1, 1923:				
Oklahoma.	102	352,100	56	151,315
N. Texas.	60	195,950	31	65,300
Kansas ..	41	117,500	25	63,820
N. La. ...	20	49,050	6	15,000
Arkansas..	17	27,010	10	9,260
Total ..	240	741,610	128	304,695
Aug. 1, 1923:				
Oklahoma.	102	359,900	54	125,915
N. Texas.	60	196,450	32	54,700
Kansas ..	41	110,400	26	61,640
N. La. ...	20	45,550	9	16,650
Arkansas..	17	27,010	6	16,135
Total ..	240	739,310	126	268,840
Oct. 1, 1923:				
Oklahoma.	109	368,500	56	130,100
N. Texas.	67	216,850	37	55,500
Kansas ..	42	130,900	19	39,250
N. La. ...	20	48,850	11	15,550
Arkansas..	18	36,160	4	16,700
Total ..	256	801,260	127	256,500
Nov. 1, 1923:				
Oklahoma.	111	366,400	52	117,925
N. Texas.	70	217,350	39	61,550
Kansas ..	42	130,400	19	46,300
N. La ...	20	48,950	5	20,000
Arkansas..	16	38,950	8	13,750
Total ..	259	802,050	123	259,525
Dec. 1, 1923:				
Oklahoma.	108	369,000	50	126,425
N. Texas.	70	217,350	34	61,800
Kansas ..	43	131,100	22	63,300
N. La. ...	19	48,950	5	20,500
Arkansas..	17	37,950	8	13,600
Total ..	256	804,350	119	270,765

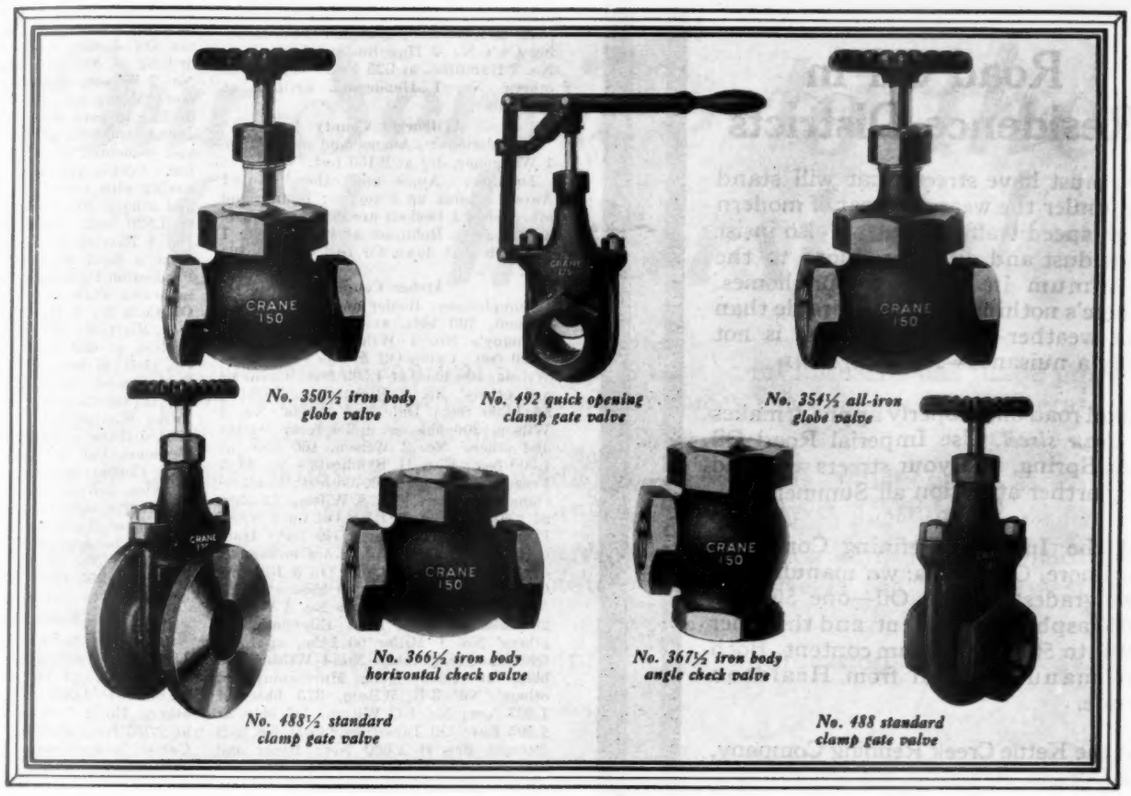
TO DOUBLE ALLOWANCE

WASHINGTON, D. C., Jan. 28.—Legislation increasing the allowance of minor children of the Osage Tribe of Oklahoma from $2,000 to $4,000 a year, has been given the approval of Secretary of the Interior Work. The measure proposes that $1,000 instead of $500 be paid the parents or guardians of these children every three months, the same as is now being paid to the restricted full-blood members of the tribe.

The legislation also provides autaority for the payment of $500 a quarter to Osage parents with children who have no income of their own, the money to come from the parents' funds. Another provision of the bill would permit the Interior Department to pay additional funds through a guardian or direct to a restricted Indian whenever it is deemed to his best advantage.

FUEL OIL TANK FLOOD

AMARILLO, Tex., Jan. 26.—A pipe connection leading from the 150,000-gallon tank of fuel oil which the Fort Worth & Denver Railroad uses for storage purposes, near the round house, broke and 50,000 gallons of oil was poured out over the yards. Men worked all night to salvage what they could and to clean off the ground as a precaution against fire.


No. 350½ iron body globe valve
No. 492 quick opening clamp gate valve
No. 354½ all-iron globe valve
No. 366½ iron body horizontal check valve
No. 367½ iron body angle check valve
No. 488½ standard clamp gate valve
No. 488 standard clamp gate valve

CRANE SMALL GLOBE, ANGLE, CHECK AND GATE VALVES ALL-IRON OR IRON BODY

For general service in field and refinery and in bulk stations and distributing stations, these valves are designed and made with care to meet the oil man's requirements.

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"Chelsea" Lavatory. Grime does not stick to its Vitreware basin

Road Oil In Residence Districts

We must have streets that will stand up under the wear and tear of modern high speed traffic. But we also insist that dust and dirt be reduced to the minimum in front of our homes. There's nothing more unbearable than hot weather—*and dust.* Dust is not only a nuisance—it is *dangerous.*

Good road oil, properly applied, makes a *clean street.* Use Imperial Road Oil this Spring, and your streets will need no further attention all Summer.

At the Imperial Refining Company, Ardmore, Oklahoma, we manufacture two grades of Road Oil—one 50% to 60% asphaltum content, and the other 40% to 50% asphaltum content. Both are manufactured from Healdton crude.

At the Kettle Creek Refining Company, El Dorado, Arkansas, we are also producing an excellent 50% to 60% asphaltum content, as well as 40% to 50% asphaltum content. Made from El Dorado crude, both are splendid road oils.

Contract for your road oil now. We have plenty of cars to make prompt delivery over the season, and a limited quantity to offer. We will be glad to confer with you as to the oil best suited for your requirements. Wire—

Imperial Oil Marketing Company

General Offices: Kennedy Bldg., Tulsa, Oklahoma

GR673

NORTH TEXAS FIELDS

(Continued from Page 56)

Jackson, drilling just above production depth around 1,800 feet; Perkins and others' No. 1 Rhodes, drilling in brown shale at 1,105 feet; Texhoma Oil & Refining Co.'s No. 2 Hamilton, at 1,450 ft. No. 3 Hamilton, at 525 feet. Taylor and others' No. 1 Henderson, drilling at 1,020 feet.

Wilbarger County

Completions: Adams and others' No. 1 Waggoner, dry at 2,150 feet.

Drilling: Apple and others' No. 1 Ancell, rigging up a rotary; Dennis and others' No. 1 Beckett are drilling in shale at 620 feet; Robinson and others No. 1 McCaleb shut down for fuel oil at 2,164 feet.

Archer County

Completions: Bohler and others' No. 3 Wilmot, 100 bbls. at 1,600 feet; same company's No. 1 Wilson, 320 bbls. at 1,590 feet; Camp Oil & Gas Co.'s No. 3 Wilson, 100 bbls. at 1,599 feet; Chenault and others' No. 2 Richardson, 75 bbls. at 1,360 feet; Dale and others' No. 3 Wilson, 200 bbls. at 1,590 feet; Dorain and others' No. 2 Wilson, 160 bbls. at 1,600 feet; F. & H. Syndicate's No. 14-A Ferguson, 40 bbls. at 1,465 feet; Featherstone and others' No. 8 Wilson, 75 bbls. at 1,600 feet; Fort Ring Oil Co.'s No. 7 Ferguson; 15 bbls. at 1,540 feet; Hudspeth and others' No. 2 Ambercrombie, dry at 1,100 feet; Humble Oil & Refining Co.'s No. 2 Netherton, 20 bbls. at 1,580 feet; Kentucky Oil Corp.'s No. 3 Wilson, 20 bbls. at 1,600 feet; Litchfield and others' No. 1 Miller 60 bbls., at 1,340 feet Maer and others' No. 4 Wilson, 125 bbls. at 1,600 feet; Murchison and others' No. 3-B Wilson, 375 bbls. at 1,595 feet; No. 1-C Wilson, 485 bbls. at 1,595 feet; Oil Investment Co.'s No. 4-B Parrish, dry at 1,600 feet; Riner and others' No. 1 Wilson, 306 bbls. at 1,617 feet; R. M. F. Oil Co.'s No. 2 Wilson, dry at 1,630 feet; Staley and others' No. 1 Nichols, dry at 1,850 feet; Sunshine State Oil & Refining Co.'s No. 5 Carter Brothers,' 2 bbls. at 1,585 feet; same company's No. 14 Carter Brothers, 35 bbls. at 1,585 feet; same company's No. 2 Parrish, 15 bbls. at 1,590 feet; Swastika Oil Co.'s No. 2-B Richardson, dry at 1,400 feet; Doctor Wallace's No. 11 K. & K., 75 bbls. at 1,765 feet; White and others' No. 2 Woodrum, dry at 1,405 feet.

Drilling Operations

Drilling: The Texas Co.'s No. 1 Dormier is drilling in a hard sand at 1,165 feet; No. 1 Parrish, drilling in gumbo at 1,565 feet; Anderson and others' No. 2 Wilson, drilling at 900 feet; Brannon and others' No. 1 Wilson, shut down at 1,625 feet; Bridwell and others' No. 2 Wilson, drilling in shale at 1,645 feet; Burton and others' No. 1 Wilson, drilling in brown shale at 1,715 feet; Camp Oil & Gas Co.'s No. 6 Wilmot, drilling at 1,070 feet; Clark and others' No. 1 Miller, drilling at 405 feet; Dale and others' No. 2 Wilson, swabbed 200 bbls. in 18 hours and testing a sand at 1,600 feet; No. 4 Wilson, rigging to swab a sand at 1,600 feet; No. 2-B Wilson, swabbed 450 bbls. in five hours from a sand at 1,595 feet and not completed; No. 4-C Wilson, bailing an oil sand at 1,605 feet; Dee and others' No. 3 Mangold, drilling in hard rock at 1,300 feet; Empire Gas & Fuel Co.'s No. 2-B Wilson, drilling a broken sand showing some oil at 1,400 feet; No. 3-B Wilson, lost casing seat on top of an oil sand at 1,600 feet; No. 1-C Wilson, drilling at 630 feet; Featherstone and others' No. 4-C Wilson, bailing and testing an oil sand at 1,600 feet; No. 10-C Wilson, drilling in shale at 1,365 feet; Graham and others' No. 1 Wilson, fishing job at 1,580 feet; Gould and others' No. 2 White, drilling a broken sand showing oil at 1,630 feet; Gwynn and others No. 7 Mrs. Carter, 250 feet of oil in the hole and drilling at 1,580 feet; No. 8 Mrs. Carter, drilling at 1,105 feet; No. 1-B Wilson, drilling at 1,005 feet; Hardeyeste and others' No. 1 Parrish, moving in a rotary machine to test a sand at 1,610 feet; Henley and others' No. 1-B Wilson, shut down on top of a sand showing oil at 1,601 feet; Humble Oil & Refining Co.'s No. 1 Nichols, drilling in lime at 1,325 feet; No. 1-B Wilson, drilling at 900 feet; Kimmell and others' No. 4 K. & K., drilling in brown shale at 585 feet; Lynch and others' No. 1 Birdwell, swabbing salt water at 1,320 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Matthews, drilling at 885 feet; Morris and others' No. 2 Wilson, cementing casing at 1,607 feet; Moore and others' No. 1 Wilson, drilling in hard shale at 1,635 feet; Murchison and others' No. 2-B Wilson, set and cemented 6⅝-inch casing at 1,586 feet; Norton and others' No. 1 O'Donnell, having pipe trouble at 1,275 feet; Pace and others' No. 1 Ford, drilling in lime at 1,820 feet; Panhandle Refining Co.'s No. 1 Parrish, swabbing 250 bbls. daily from a sand at 1,600 feet; Petroleum Production Co.'s No. 1 Sanderson, drilling in brown shale at 1,455 feet; Shamrock Oil Co.'s No. 1 Harbison, drilling at 555 feet; Sixty-Six Oil Co.'s No. 8-B Wilson, drilling at 600 feet; Staley and others' No. 1-B Wilson, drilling at 255 feet; Tackett and others' No. 2 Parrish, drilling in brown shale at 1,245 feet; the Texas Wonder Pool Oil Co.'s No. 1 Parrish, drilling in hard rock at 1,300 feet; Texhoma Oil & Refining Co.'s No. 8 Mrs. Carter, drilling at 1,450 feet; No. 2 Lyles, drilling in shale at 1,675 feet; Verschoyle and others' No. 1 Wilson, drilling at 1,325 feet; No. 1-B Wilson, drilling in mud at 1,475 feet; Doctor Wallace's No. 12 K. & K., drilling in gumbo at 965 feet; Wall-Duke Oil Co.'s No. 1 Garvey, fishing job at 925 feet

Young County

Drilling: Bullington and others' No. 1 Campbell, drilling at 805 feet; Calmo Oil Co.'s No. 1 Henson, shut down for casing at 1,000 feet; Harrown and others' No. 1 Vick, drilling in hard rock at 2,385 feet; McGuire and others' No. 1 Carter, fishing for casing at at 1,875 feet; McKenzie and others' No. 1 Logan, drilling in shale at 1,130 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Gibson, drilling in hard black lime at 3,865 feet; No. 1 Moren, fishing for casing at 1,865 feet; Nash and others' No. 1 Bower, drilling a sand showing some oil and gas at 1,840 feet; North American Refining Co.'s No. 1-B Scott, fishing at 800 feet; Peter and others' No. 1 Boley, drilling a sand with a hole full of water at 1,090 feet; Pomona Valley Oil Co.'s No. 1 Hughes, trying to shut off water at 2,700 feet; Richardson and others' No. 1 Wilburn, drilling in brown shale at 1,330 feet; Seaboard Oil & Gas Co.'s No. 5-A Hughes, drilling at 1,200 feet; No. 6-A Hughes at 820 feet; Sinclair Oil & Gas Co.'s No. 3 Moren, drilling in gumbo at 975 feet; Whitehead and others' No. 1 Graham, underreaming 8¼-inch casing at 2,420 feet; No. 1 Johnson, fishing for casing at 4,229 feet.

Eastland County

Completions: Kokomo Oil Co.'s No. 2 Harris, 20,000,000 feet of gas at 3,140 feet; The Texas Co.'s No. 4 Hightower, 50 bbls. at 1,230 feet; Humble Oil & Refining Co.'s No. 1 Lanier, dry at 3,015 feet; Nixon Oil Co.'s No. 2 Couch, dry at 1,935 feet; Turner and others' No. 1 Rio Bravo, 70 bbls. at 3,325 feet.

Drilling: Graham and others' No. 1 Calloway, drilling at 365 feet; Humble Oil & Refining Co.'s No. 5 Merrill, at 500 feet; Magnolia Petroleum Co.'s No. 15 Westmoreland, at 300 feet; McLester and others' No. 2 Westmoreland, 900 feet of oil in the hole and drilling a sand at 2,450 feet; Post Duke Oil Co.'s No. 3 Abernathy, drilling at 1,505 feet; Rosenfeld and others' No. 2 Gilbert, at 455 feet; the States Oil Corp.'s No. 4 Quiet, drilling in lime at 3,145 feet; Texas & Pacific Coal & Oil Co.'s No. 2 Brashears, drilling at 400 feet; Atlantic Oil Production Co.'s No. 11 Fields, shot with no results and drilling at 2,810 feet; Burkett and others' No. 1 Howlen, drilling at 205 feet; Dougherty and others' No. 1 Johnson, drilling in rock at 2,255 feet; Mahew and others' No. 1 Luse, drilling in hard lime at 3,450 feet; Rosenfield and others' No. 1 Brunett, fiishing for casing at 2,110 feet.

Stephens County

Completions: McLain and others' No.

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1 Gin Lot, dry at 3,300 feet; Mahlsted & Mook Oil Co.'s No. 1 Boyett, dry at 3,700 feet; Humble Oil & Refining Co.'s No. 6 Jones, 150 bbls. at 3,190 feet; Texas Fidelity Oil Corp.'s No. 1 Parks, 4,000,000 feet of gas at 2,100 feet.

Drilling: Mid-Kansas Oil & Gas Co.'s No. 12 Hill, drilling in brown shale at 950 feet; No. 3 Richardson, running 10-inch casing at 1,915 feet; No. 2 Williams, drilling in gumbo at 905 feet; Pierce Oil Corp.'s No. 2 Crudgington, running 12-inch casing and cleaning out at 750 feet; Prairie Oil & Gas Co.'s No. 15 Atkins, drilling at 1,050 feet; Republic Oil Co.'s No. 4 Knox, hole full of water and drilling at 2,215 feet; Rochelle Oil Co.'s No. 1-A Sweeney, fishing for casing at 1,400 feet; Scott and others' No. 14 Higginbotham, drilling in lime at 3,215 feet; Texas Consolidated Oil Co.'s No. 5 Martin, drilling by tools at 4,035 feet; Empire Gas & Fuel Co.'s No. 6 Wallace, drilling at 1,175 feet; Graham and others' No. 1 Sanders, drilling in rock at 2,685 feet; Magnolia Petroleum Co.'s No. 4 Brown, hole full of water and drilling at 3,550 feet; Pender Oil Co.'s No. 2 Davis, drilling at 1,250 feet; Quakins Petroleum Co.'s No. 1 Bruce, drilling at 625 feet; Rosser and others' No. 5 Jones, drilling by tools at 2,650 feet; Scott and others' No. 2 Davis, drilling at 2,600 feet; Swensondale Oil Co.'s No. 1 Elliott, sidereaming 6-inch casing with a hole full of water at 2,990 feet; No. 1 Herrington, drilling in blue shale at 2,015 feet; No. 19 Swenson, drilling in soft rock at 2,650 feet; Texas & Pacific Coal & Oil Co.'s No. 6 Veale, drilling at 2,900 feet; Street Three States Oil Co.'s No. 2 Gaithey, temporarily abandoned in May 1923, has started drilling at 550 feet.

Wildcats

Throckmorton County—Completions: McCann and others' No. 1 Ray, 7,000,000 feet of gas at 844 feet.

Shackelford County — Completions: Humble Oil & Refining Co.'s No. 1 Jackson, 13 bbls. at 3,560 feet.

Drilling: Donnelly and others' No. 1 Brooks, fishing for tools at 900 feet; Humble Oil & Refining Co.'s No. 1-B Lynch, 700 feet of oil in the hole and drilling at 3,485 feet; No. 5-A Poindexter, drilling at 585 feet; No. 1-E Poindexter, set 5-inch casing and drilling in lime at 3,410 feet; Landreth Oil Co.'s No. 11 Poindexter, drilling at 900 feet; No. 14 Poindexter, drilling in hard shale at 2,800 feet.

Palo Pinto County—Completions: Dalton Belle Oil Co.'s No. 1 Dalton, 30 bbls. at 1,255 feet; Zada Belle Oil Co.'s No. 1 Weldon, 40 bbls. at 3,955 feet.

Drilling: Pender Production Co.'s No. 1 Slemmons, fishing for tools at 4,100 feet; Texas & Pacific Coal & Oil Co.'s No. 1 Robinson, drilling by tools at 3,580 feet; No. 144 Stuart, swedging casing at 1,695 feet; Clark and others' No. 1 Conklin, drilling by casing at 3,950 feet; Harris and others' No. 1 Weldon, drilling at 2,655 feet; Hess and others' No. 1 Crocker, drilling at 1,780 feet; Hughes and others' No. 1 Jones, drilling in hard black lime at 4,110 feet; Moore & Sneibold's No. 1 Pruitt, drilling at 2,475 feet; Scott and others' No. 1 River Bed, fishing for casing at 3,713 feet; Simms Oil Co.'s No. 1 Costello, drilling at 4,060 feet; Upham Gas Co.'s No. 1 Wharton, cleaning out after setting 5-inch casing at 3,670 feet.

Callahan County—Drilling: Atha and others' No. 1 Short, spudding at 80 feet; Byron and others' No. 1 Hennessy, drilling in hard rock at 3,995 feet; Dutton and others' No. 2 Cathey, drilling at 1,725 feet; Hickey and others' No. 2 Finley, fishing for tools at 2,340 feet; Moore and others' No. 4 Ackers, drilling at 400 feet; Shackelford and others' No. 1 Allen, underreaming casing at 1,560 feet; Slick and others' No. 1 Barr, fishing for an underreamer at 1,600 feet.

Mitchell County—Drilling: Kelsay and others' No. 1 Badgett, running tubing at 3,120 feet; Sloan and others' No. 1 Smart, drilling just above production depth at 2,945 feet; California Co.'s No. 1 Morrisey, drilling without any showing at 4,030 feet; No. 2 Morrisey, drilling at 1,285 feet; No. 2 Miller, drilling at 1,570 feet.

Clay County — Drilling: Crude Oil Production Co.'s No. 1 Kinder, underreaming 5 3/16-inch casing at 1,100 feet; Gulf Production Co.'s No. 1-A Boddy, fishing for four joints of casing at 2,700 feet; No. 3 Worsham, drilling at 1,900 feet; Lone Star Gas Co.'s No. 1 Martin, drilling at 890 feet; No. 2 Withers, drilling at 915 feet; Nebraska Oil & Gas Co.'s No. 1 Myers, setting 5 3/16-inch casing at 3,300 feet; Scalling Oil Corp.'s No. 1 Scalling, cleaning out at 1,000 feet.

Montague County—Drilling: Amerada Oil Corp.'s No. 1 Beasley, setting 5 3/16-inch casing at 3,100 feet; Gulf Production Co.'s No. 1 Benton, has 3,000 feet of water in the hole from a sand at 3,270 feet.

Armstrong County—Completions: Magnolia Petroleum Co.'s No. 1 J. A. Ranch, dry at 3,985 feet.

Carson County—Drilling: The Texas Co.'s No. 3 Burnett, underreaming 10-inch casing and cleaning out at 1,375 feet; No. 1 Mary Burnett, spudding at 40 feet; Gulf Production Co.'s No. 3-A Burnett, drilling up a joint of pipe at 2,125 feet; Silk and others' No. 3 Burnett, drilling at 3,230 feet.

Gray County—Drilling: Holmes and others' No. 1 Ross, drilling in red beds at 1,065 feet; The Texas Co.'s No. 1 Saunders, running 8¼-inch casing at 2,375 feet.

Hutchinson County—Drilling: Humphreys Oil Co.'s No. 1 Johnson, fishing for tools at 2,585 feet; Montgomery and others' No. 1 Johnson, underreaming casing at 1,840 feet; total depth, 1,880 feet; McGee and others' No. 1 Smith Capers, cleaning out at 3,175 feet; Producing & Refining Oil Co.'s No. 1-B Bivens, drilling at 1,840 feet.

Potter County—Completions: Producing & Refining Oil Co.'s No. 2 Masterson, 13,000,000 feet of gas at 306 feet.

Drilling: Producers & Refiners Oil Co.'s No. 1-A Bivens, fishing for tools at 2,934 feet.

Wheeler County—Drilling: Skelly Oil Co.'s No. 1 Davis, drilling at 3,200 feet; Tyrell and others' No. 1 Sheldon, fishing for tools at 1,645 feet.

PRODUCTION REPORT

Week Ending January 24, 1924

Burkburnett	
American Refining Co.	210
Barkley & Meadows	1,735
Humble Oil & Ref. Co.	630
Gulf Production Co.	1,610
Magnolia Petroleum Co.	3,610
Middle States Oil Co.	185
McMahon Oil Co.	540
Panhandle Refining Co.	440
Sinclair Oil & Gas Co.	60
The Texas Co.	660
Texhoma Oil & Refining Co.	555
Miscellaneous	11,070
Total	21,510
Electra	
Empire Gas & Fuel Co.	1,330
Humble Oil & Ref. Co.	110
Griswold Oil Co.	420
Gulf Production Co.	900
Magnolia Petroleum Co.	4,710
Middle States Oil Co.	190
McMahon Oil Co.	215
The Texas Co.	4,845
Texhoma Oil & Ref. Co.	2,255
Miscellaneous	4,815
Total	19,810
Iowa Park, Etc.	
American Refining Co.	35
Griswold Oil Co.	35
Gulf Production Co.	40
Middle States Oil Co.	5
Texhoma Oil & Ref. Co.	165
Miscellaneous	2,165
Archer County—	
American Refining Co.	250
Empire Gas & Fuel Co.	20
Griswold Oil Co.	1,160
Gulf Production Co.	300
Humble Oil & Ref. Co.	45
The Texas Co.	790
Texhoma Oil & Ref. Co.	2,465
Miscellaneous	13,250
Petrolia—	
Gulf Production Co.	60
Magnolia Petroleum Co.	85
The Texas Co.	95
Miscellaneous	130
Total	23,770
Stephens County—	
Empire Gas & Fuel Co.	95
Gulf Production Co	1,685
Humble Oil & Ref. Co.	1,610
Magnolia Petroleum Co.	860
Mid-Kansas Oil & Gas Co.	1,945
Prairie Oil & Gas Co.	1,060
Sinclair Oil Co.	210
The Sun Co.	815

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The Texas Co.	2,485	
T. & P. Coal & Oil Co.	1,255	
Miscellaneous	8,350	
Total		20,240
Eastland County		
Gulf Production Co.	625	
Humble Oil & Ref. Co.	135	
Magnolia Petroleum Co.	545	
Panhandle Refining Co.	495	
Prairie Oil & Gas Co.	920	
Sinclair Oil Co.	500	
The Texas Co.	222	
T. & P. Coal & Oil Co.	1,030	
Miscellaneous	2,960	
Total		7,432
Other Fields		
Strawn—		
T. & P. Coal & Oil Co.	320	
Miscellaneous	605	
Moran—		
Empire Gas & Fuel Co.	165	
Humble Oil & Ref. Co.	530	
The Texas Co.	210	
Texhoma Oil & Ref. Co.	210	
Miscellaneous	2,475	
Coleman County—		
Miscellaneous	135	
Brown County—		
Miscellaneous	350	
Comanche-Eastland—		
Humble Oil & Ref. Co.	420	
Magnolia Petroleum Co.	1,195	
Prairie Oil & Gas Co.	265	
Sinclair Oil & Gas Co.	75	
The Texas Co.	310	
T. & P. Coal & Oil Co.	290	
Miscellaneous	5,300	
Young County—		
Gulf Production Co.	125	
North American Refining Co.	110	
Sinclair Oil & Gas Co.	515	
Oklahoma Petroleum & Gas Co.	85	
Panhandle Refining Co.	380	
The Texas Co.	125	
Miscellaneous	3,240	
Mitchell County	850	
Reagan County	170	
Jack County	30	
Total		18,485
Total all fields		108,467
Total last week		106,175
Gain		2,292

CENTRAL WEST

(Continued from Page 64)

19, and No. 3 J. Herman, same section. The Hartford Oil & Gas Co. is drilling a test on the Catherine Ford farm, Section 33, Jackson Township, Wells County.

In Delaware Township, Delaware County, the Raymond Oil Co. abandoned Nos. 1 and 2 J. H. Krohn farm, Section 11, and W. E. Rhodes did the same with No. 1 Walter Mong, Section 12.

In Southwestern Indiana Princeton Field, in Center Township, Gibson County, Mann, Huber & Tichenour started drilling No. 4 W. C. Reeves, Section 24, and No. 5 M. Hollingsworth, same section.

In Harrison Township, Knox County, Perry Andrews' second well on the Ida B. Doty, Section 29, shows for a 5-bbl. pumper, while his No. 1 T. S. Bartlow, Section 30, was dry. N. Like and others started a test on the C. C. Cooper farm, Section 30.

Illinois Field

The Illinois Field failed to show a completion of worth during the week and but a few new wells starting. One wildcat, some distance from known production, is to be drilled by McCurdy and others on the John Baxter farm, Section 28, Pope Township, Fayette County.

In Friendsville Township, Wabash County, George Porter and others are drilling a test on the O. Matheney farm, Section 18, and southwest from Allendale.

The test of the Opdyke Oil Co., on the R. I. Estes farm, Section 17, Pendleton Township, Jefferson County, has reached 2,300 feet and it appears the owners are going to test out the deep Trenton Rock in hopes of finding a pay sand there.

In Robinson Township, Crawford County, Burns and others' No. 3 N. C. Boyd farm, Section 24, is a rig up ready to start drilling.

In the stray sand pool in Martinsville Township, Clark County, the Ohio Oil Co. is drilling No. 10 G. W. Atkins farm, Section 30. The King-Wood Oil Co. is drilling No. 1 Tucker Morgan farm, same section, while the Trenton Rock Oil Co. started drilling No. 3 on the William Carper farm, same section.

In Bond Township, Lawrence County, the Ohio Oil Co. is drilling No. 3 J. E. Steffey, Section 29.

No completions were reported from any section of the Eastern Kentucky Fields as the heavy snow and winds made travel and work impossible. Every drilling well of the Union Gas & Oil Co., in the North Weir sand field of Lawrence-Johnson Counties, is shut down and the same condition prevailed with other companies in the field as well as in the South Weir Field in Johnson and Magoffin Counties.

The runs of the Cumberland Pipe Line Co., for the week ending January 24, shows a total run of 75,824.61 bbls. for a daily average of 12,637.43 bbls. The past few weeks has brought the production of the field to a lower point than for more than a year, but as warmer weather comes and all wells are pumped regularly, they will show close around 15,000 bbls. a day, about the usual daily average during the summer's runs. The new drilling now planned in the Big Sandy Field should before the middle of the year bring the daily average production to around 20,000 bbls.

KANSAS FIELDS

(Continued from Page 64)

the Seward Oil & Gas Co. found a showing of oil and gas at 2,427 feet in its No. 1 Sealey, NE cor. NW, Section 20-33-33w.

The new area opened up in northern Cowley County by Martin & Wilson, in Section 5-31-6, was coming in for its share of activity. The Southwestern Petroleum Co. staked a location for its No. 1 Spahr, SW cor. SE SW, Section 5-31-6, and the S. S. Oil Co. also made a location for its No. 1 Sans, SE cor. NE NW, same section. The Empire Gas & Fuel Co. had a rig in place for its No. 1 Eastman, SE cor. Section 6-31-6, and Foster and others were building a rig for their No. 1 Eastman, NE cor. Section 7-31-6. Collins and others staked a new location for No. 1 Scott, NW cor. SE NW, Section 8-31-6, and the Phillips Petroleum Co. had a rig completed for its No. 1 Stout, NW cor. same section. A location was made for Garden and others' No. 1 Stout, NW cor. NE SW NW, also in the same section.

In Elk County, timbers were on the ground for Roth and others' No. 4 Porter, SW cor. NW SW, Section 12-29-8.

Greenwood County

Greenwood County did not report very much progress. A new location was staked by Joe Nathan for his No. 1 Doles, SW cor. SE NE, Section 30-23-9, and timbers were on the ground for the Derby Oil Co.'s No. 10 Moss, CSL NE NW, Section 30-25-9, and for Rhodes and others' No. 3 Browning, SW cor. NE. Section 17-22-10. Rigs were in place for the Phillips Petroleum Co.'s No. 6 Lewis, SW cor. NW NW, Section 32-23-10, and for the Mid-Kansas Oil & Gas Co.'s No. 2 Martendell, SE cor. NE NE, Section 31-23-10. The same company also had a rig completed for its No. 1 Ladd, SW cor. SE, Section 19-25-9, and Bason and others had finished the rig on their No. 3 Angora, CSL SE NW, Section 14-24-9.

Two failures were recorded in Greenwood County. The National Refining Co. found a broken sand at 1,902-07 feet in its No. 7 Wicks, NE cor. SW NE. Section 27-22-11, but no production and the well was abandoned as dry at 2,003 feet. Pulaski & Simmons also abandoned their No. 1 Imthurn, SE cor. SW, Section 19-22-12, at a total depth of 2,491 feet after getting a hole full of water in the second break in the lime.

The Gypsy Oil Co.'s No. 3 Nixon, SW cor. NE, Section 34-24-9, had a showing of oil at 2,152 feet. Carlson & Smith were spudding their No. 1 Wreshing, NE cor. NW NW, Section 24-26-9. Jamison and others' No. 2 Dixon, CEL SW SW, Section 18-28-9, was shut down at 2,670 feet with a hole full of water after topping the lime at 2,715 feet.

In Russell County, the M. M. Valerius Oil Co. had rigs on the ground for two tests, its No. 1 Phillips, SW cor. Section 3-13-13w, and its No. 1, NW cor. NE, Section 17-12-15w.

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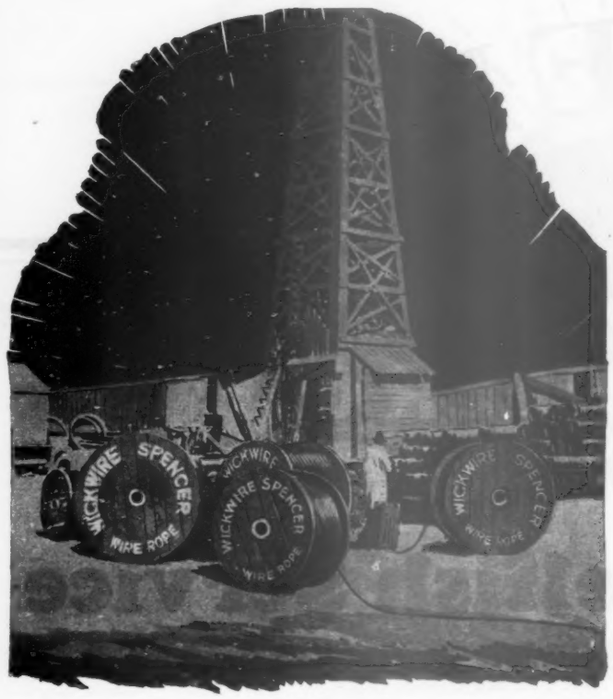

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LUBRICATION EXPERIMENTS CAUSE DEBATE

(Continued from Page 113)

no indication as to what margin there was for errors and accidents, because in a garage like the author's there was a system, and things were looked after. In such a case the usual emergencies never arose, but in many cases all sorts of emergencies arose, and it was wise for engineers to think that they should err a little on the safe side. In that way they might have a little more viscosity in the oil. The difficulty was that we did not know what the distribution of oil was actually in any engine; we got extraordinarily different results. He did not agree with those who were always shouting for a thick oil. If they wanted a thick oil with a very expensive stock in it, then there was something wrong with the engine or the design of it. With a thin oil the starting was better and the engine was generally cleaner, but there were dangers, as he had pointed out. He had been connected with oils for 25 years, and had been looking for the best oil for each purpose, independent of its origin. He had not got there yet.

Puts Persian First

His experience was that the Conradson evaporation test was not of much importance by itself. In that test we took no note of the effect of viscosity. Whatever type of oil we used, whether it be Texan, Californian, Russian, Persian, or any other, the amount of carbon went up with the viscosity. The amount of carbon would differ with different types of oil. If we had a Persian oil of a given viscosity, the thinner grades would give less carbon; Texan oils would give more; Russian oils would give less. The Persian oils came first, the Russian next, and probably the Mid-Continental next. A heavy Texan oil, with high specific gravity, would give more carbon, but whether that was right or wrong from the original oils, there was no doubt whatever after the oil had been used. His own method of judging oil for this purpose was to let the oil be oxidized somewhere and then recarbonize it. In that way he got a very sure indication of what would go on in the engine. He had had samples from the crank case of practical running and experimental engines, and had observed from these that the crank case contents became constant after a while. As so much was put in, so much was coming out, and we got to a constant condition of the oil after it had settled. The oxidation steadily went up during a week or fortnight. As the oxidation went up, the carbon content went up, and the oils which oxidized more readily gave asphalt more readily and gave the dirtiest crank case, but he could not say that they gave most in the cylinder. It was his opinion that after a very short time the carbon on a piston or in the average cylinder, on a fairly smooth and rounded surface, grew, and we wanted some method of noticing how it grew. In conclusion, he said that if one would look at the chemical nature of the oil in conjunction with the other tests, and then at the material, he believed we should arrive at something like a reliable B. E. S. A. specification.

Says "Any Old Oil Will Do"

Major Wheeler referred to experiments he had carried out before the war, from which he had secured certain results; these, whilst not so conclusive as he had hoped, enabled him to state that, with certain obvious reservations, any old oil would answer. There were two ways of ascertaining whether an oil was cheap or not—by "cheap" he meant getting the best for one's money. Neither way was wholly satisfactory, but, combined, they might give good results. The first method was by laboratory analysis, and the second by practical tests under service conditions. The lines he was working on before the war, and which he had recently recommenced, were as follows: From a sample drawn from a certain supply of oil, he ascertained in the laboratory the viscosity; cold or setting test; loss of weight on heating; and flash point; specific gravity. He attached greatest weight to the viscosity and cold tests. He then proceeded to carry out practical trials, taking note of m.p.g. (oil and petrol), carbon deposit, gumminess, etc.

Whatever the result of the trials, and no matter whether an oil gave results of an outstanding character one way or the other, the data should be recorded against the laboratory analysis. The results he had obtained up to the time of the war confirmed those obtained by the author. Eleven out of twelve oils tested gave satisfactory lubrication, and no excessive carbon deposit. The price of the oils varied from 1s. to 2s. 6d. per gallon (in 1913). The one oil which did not give satisfaction fully met anticipations in that respect, and in the ordinary course would never have been seriously considered as possibly suitable, but the suppliers, with their usual optimism, stated that it was their opinion that it would answer, and it was decided to test it. Fortunately, the trial was stopped before any mischief was done. Major Wheeler agreed with the author that it was unnecessary to drain out the crank case every 1,000 miles; five times that distance might safely be run with corresponding economy. His practice was to inspect the oil in the sump once a month. If it showed a reasonable degree of clarity it was not disturbed, and fresh oil was added to the proper level. If there were evidence of the presence of metallic flakes, grit or other foreign matter, it was drawn off and filtered. He was satisfied, and had proved by actual use, that the drawn-off oil was serviceable. In practice, the filtered oil was reintroduced into the sump with fresh oil in the proportion of 50-50. In tests that he had carried out this year with various makes of oil, the lower-priced oil of each of three companies had given equal or better results than the respective higher-priced oils. The price ratio was, curiously enough, much about the same as in 1913. His advice was not to worry too much about the quality of oil, so long as it was suitable for the particular purpose.

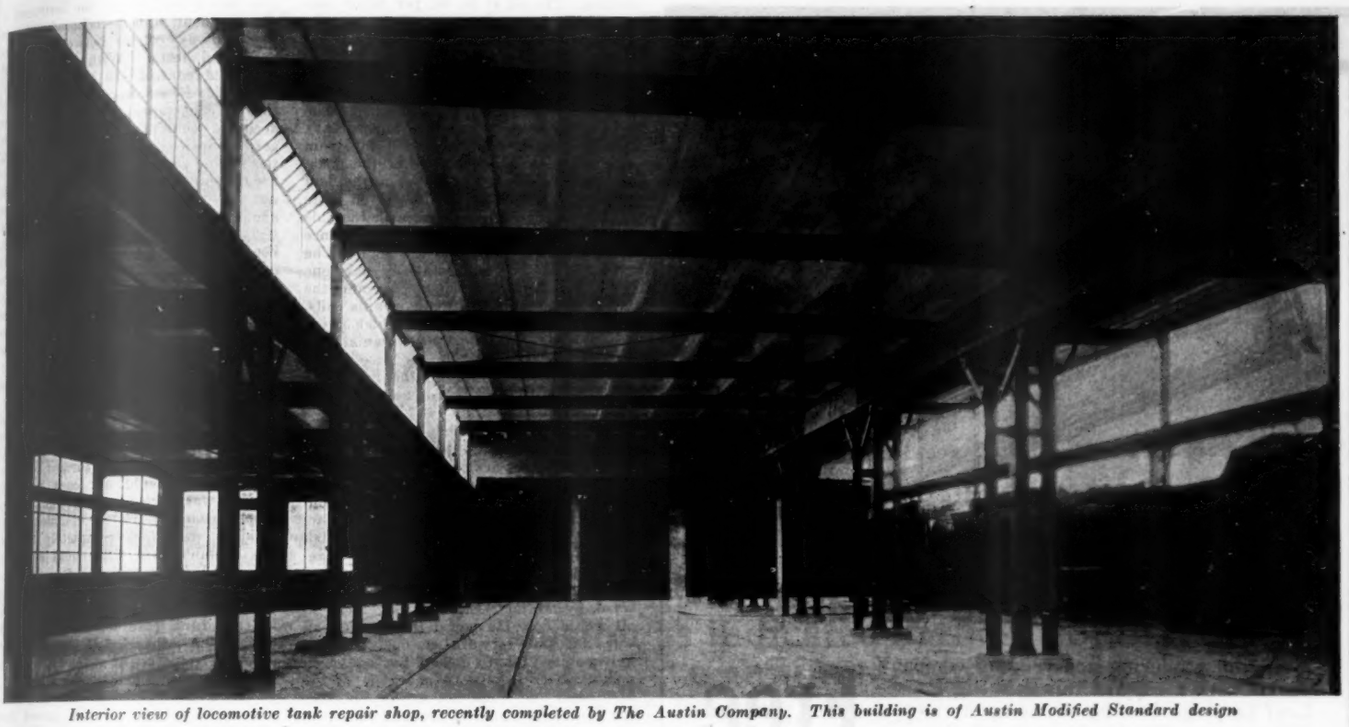
Specifications Merely Guide

E. A. Evans, referring to the suggestion that the purchase of oils should be on the basis of the B. E. S. A. specification in the future, pointed out that there is no specification for mineral lubricating oils yet for motor cars. He hoped that when these specifications were issued they would be regarded merely as a guide, and that no one would definitely utilize them for purchasing, because they would indicate a little more closely what oils were available for the job, and nothing more. The prices which had been paid for the oils mention—1s. 6d. to 8s. 6d.—were extremely alarming, and, in purchasing mineral oil at 8s. 6d. per gallon, he should say that the author had been distinctly "had." In the curves no dilution exceeded 5 per cent, and that was quite a conceivable thing if we thought of the manner in which it was determined. If it had been determined in the orthodox manner we should have had rather more valuable information. The viscosity did not follow dilution, and he believed, furthermore, that if we looked at the curves a little more closely we should find that the viscosity did not necessarily rise in the summer. With regard to the Conradson test, Mr. Evans considered this was no good. The suggestion made by Dr. Ormandy as to the use of a heavy oil reduced with kerosene, he believed, was put forward 10 years ago, but no oil company had adopted it.

Dr. Ormandy said he did not think they ever would.

Mr. Evans, as a member of an oil firm, congratulated his firm on not having done so, because, supposing the kerosene evaporated, the suggested cold test was a very important thing, and he would like to be far enough away when an engine was started with such a steam cylinder oil when the kerosene had evaporated.

Mr. Nickinson said he looked upon specifications not as selective, but as pro-



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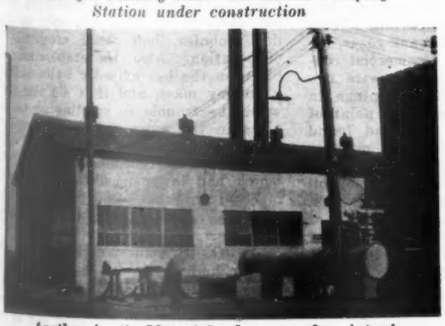

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tective. The oil at 8s. 6d. per gallon was purchased two years ago from a very well-known oil firm. He would like to know what was the orthodox way of estimating the dilution, because he had been told by many chemists that steam distillation was the proper method. The method he used was to take an ordinary side arm flask with a ground in steam tube reaching to the bottom of the flask, and if he got nothing over in the last 100 c. c., he had got all the oil off. He tried heating it to 70 degrees in the side arm flask, but there was no difference when passing coal gas through. The question of oil consumption was one largely of the fit of the pistons and the rings. Referring to Pennsylvania oils, he said that if all those which were offered as genuine Pennsylvania oils were collected together, he was afraid they would be more than the total output of the Pennsylvania fields at the present time.

Cleaning Crank Case

J. L. Cullingham said that these experiments on lubricants were undoubtedly a step in the right direction, but he suggested that they were accepted with considerable reserve in the commercial vehicle world. There was very great risk that the lesser lights among those responsible for running commercial fleets would come to the conclusion put forward by Major Wheeler, that any old oil would do. He hoped that suggestion was not put forward seriously. Also, he imagined that the author's experiments referred only to one type of vehicle, and one could not accept his finding that better lubrication had not been demonstrated, because No. 3 oil not only showed the minimum amount of cylinder wear and a good average oil consumption, but it had a decidedly good petrol consumption as well. Surely such conditions were a definite proof of better lubrication. The ash values with No. 3 oil were the lowest, and this, construed as a measure of wear and tear, further proved that that lubricant had some superiority. From the high ash values in some of the other oils, which went up to 3 per cent, one was inclined to believe that a great deal of wear took place which might very easily have been avoided. The practice of cleaning out the crank case once in every 20,000 miles or so seemed to him to be outrageous, and he could not understand how the engines went on with such uncleanliness without breakdown.

Thinks Draining Foolish

Mr. Nickinson said that, of the oils used, No. 4 was the cheapest, No. 3 next, then Nos. 5, 6, 7, 2 and 1, in that order. At present, the price of No. 4 is considerably below the price 18 months ago, when the tests were carried out. With regard to the drainage of crank cases, the engines were run under commercial conditions. He had tried some years ago to see if there was any advantage in draining crank cases, from the point of view of cylinder wear, and had found that there was no reduction in cylinder wear by draining the cases every 1,000 miles. One of the engines running on oil No. 2 had the oil changed every month, but it showed the largest amount of cylinder wear. In a case such as that of the London General Omnibus Co., which had 5,000 busses, what was to happen to the three or four gallons of oil drained out of every crank case, and which, according to Dr. Ormandy, was better than the oil originally put in? From his observations he did not see that the dirt and siliceous matter in the oil affected the wear on the crank shaft. Referring to the design of engines, he said it should be remembered that there were only certain oils which could be used, and the engines ought to be designed to run on these oils. Some people seemed to think that their high speed, high efficiency engines wanted decarbonizing every 500 miles. He did not call that high efficiency, at any rate for commercial purposes, and the sooner the designers took up designing something else, the better.

A. G. Marshall said he had been engaged in research on lubrication, using test bench engines as the instrument of measurement, and he believed that to be the halfway course between laboratory and road tests. With the bench test we could control the temperatures, and we could, if we were fortunate, control the oil consumption and get much more accurate conditions. He had tried to get laboratory tests to correlate with the engine results. So far as his experience went, neither the Conradson test nor the oxidation test told us anything about oil carbonization. The Conradson test was better than the oxidation test, because taking a wide series of oils, we got a better concordance between engine carbonization and the Conradson test than between engine carbonization and the Waters test. At the same time, there were striking deviations from that rule. He knew of oils which gave a high Conradson result, and a phenomenally low Waters result, but he believed the controlling factor there was the mechanical condition of the carbon. It was very difficult to run an engine and get all the carbon that had been formed, but commercial people did not care how much carbon was formed; they did care how much remained in the cylinder, and he believed that fact completely over-rode any chemical test that could be devised. He asked what evidence there was that the evaporation test was any criterion of oil consumption. After all, the oil in the crank case accumulated at least 5 per cent of fuel. If the oil did not reach a temperature sufficient to prevent the absorption of this, the fuel did not go down into the crank case and become absorbed in the oil. It passed down past the pistons, where the oil was at the highest working temperature, but he really could not see that it was hot enough to allow it to evaporate a light spindle oil.

Scoffs at Bench Tests

Mr. Nickinson, referring to the variable conditions under which engines worked, said that after all, if we had to run busses on London streets and wanted to find out the best oil for the job, it was no use putting up an elaborately constructed engine and running it on a bench where all these variables were eliminated. The whole object of his tests was to find out the best oil for a particular job. If some firms were to give the specifications to which their oils were blended we might arrive at some conclusions. From all these oils in fleet operation he obtained evidence that a thin oil was almost the best, if not the best. Another point he had aimed at was the condition of the oil on the evaporation test. The oil in a crank case was circulated in a fine spray, and an air current from the breathers was constantly blowing through it. The oil, split up into fine globules, lent itself excellently to evaporation. Also, the evaporation took place on the hot cylinder walls, and left a gummy mass, and if it did that there would be trouble in starting up the engines in the morning. With regard to friction, he said that in commercial work the point to be remembered was that oils which had lower coefficients of friction involved an extra cost which would wipe out any advantage obtained by using them.

W. G. Brooker suggested that the author had drawn his conclusions on a somewhat indefinite series of figures and tests; he had not classified his engines or his conditions. The chief test of the value of an oil was in its reduction of friction, and that was best expressed in petrol consumption. It had been mentioned that there was in one case a difference of 10 per cent. in petrol consumption between the use of one oil and another. That meant, if we paid double the price for oil—3s. instead of 1s. 6d. per gallon—we should get a net saving on the fuel and oil bill of 7 per cent. The conclusion that all oils gave the same result was not borne out by the author's figures. It was a pity that the author did not include a compound oil in his experiments, because many people considered such an oil preferable and superior, from a friction-reducing point of view, to a pure mineral oil. He had

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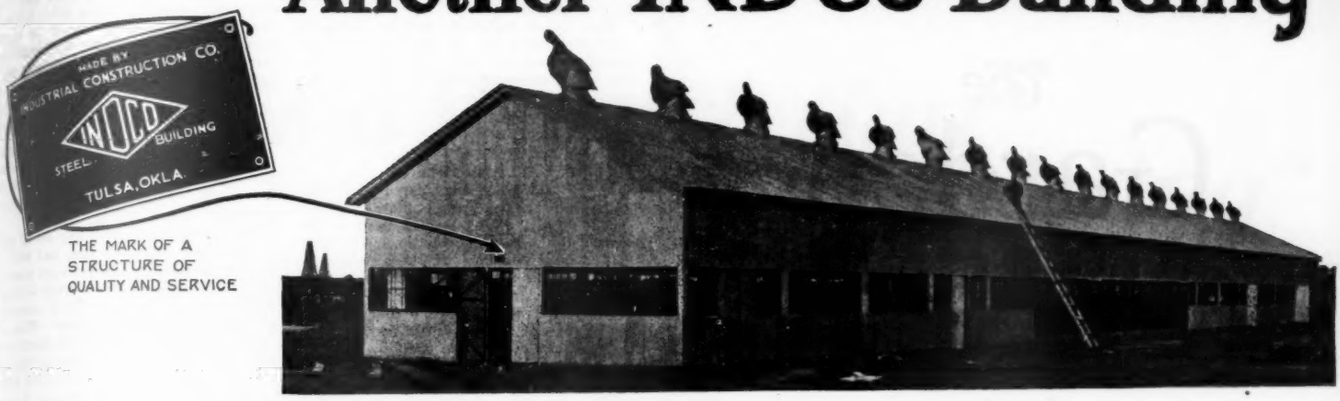

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mentioned one oil which was claimed to contain 2 per cent of castor oil, but many were under the impression that we could not get castor oil to mix with mineral in this proportion.

Mr. Seear referred to the author's statement that No. 2 was the only oil which showed any real reduction in cylinder wear, and said that on that account alone the author had made out a case for that oil. He had also made out a case for some reasonable difference in price for a superior quality.

Oil Man Replies

E. R. Redgrove considered that the author had been unfortunate in his choice of oils, which he had used in his search for better lubrication. It came rather hard to some of those who had to earn their living by researching and selling oil, and what they considered better lubricants, to be told that any old oil would do. If we did not start with the right material we should not get good results. There was an important feature in considering the ratio of viscosity with temperature. It was one of the most important things in selecting a suitable lubricant. We could consider gravity and flash point as useful guides, because an oil with a flash point which was too low could be ruled out. From his experience, running into 20 years, he would not have given a second thought to oil No. 7, on account of its 338 flash point. The Conradson test, as at present used, he regarded as practically useless for this reason. What we had to do in our search for better lubrication was to find an oil which was best going to take care of the extraordinary conditions in an automobile engine. First of all we had a sump which, under normal conditions, never got hotter than 150 degrees Fahrenheit. Just past the top of the piston there was a temperature which was three, four or five times the boiling point of the oil. We must have a lubricant which would take care of the enormous pressures found on the big ends and main bearings, which would lubricate the cylinder walls, and yet would not get past the piston rings so as to be burned up. We wanted an oil with the same viscosity at all temperatures. We should never do that, and he believed the success which had attended oil No. 4 was due to its excellent viscosity curve. We were still in the dark as to what constituted oiliness, but we had to fight against all this in convincing a commercial user of what was a good oil. We must try to get the oil which gave the best tests all the way through, and then consider the results it gave on the road and get it down to running costs per mile, He believed we should find that we could do much better than we thought we could. We should not be guided too much by price, but should consider the results in working.

Variables Important

Major Beaumont said it was so seldom that there was anything approaching a consistent series of tests on vehicles with oil consumption that it was worth while knowing precisely the conditions under which the tests had been made. He asked, therefore, what the extent of the tests had been. Some of them had the impression that with one or two of the oils only one engine had been tested, and if that were so the results might be misleading. The problem was so full of variables that the test results might be disturbing, and we could not get satisfactory results unless a large number of vehicles was used. Another point was that oil must be suitable for everyday working conditions, with the engines either well worn or new, or just in from an overhaul. He did not think Major Wheeler meant that any old oil would do. He believed that the truth of the matter was that any old old would do if the range were small, as was often the case. We must see that the source was invariable.

Deane Martin referred to the confusion which arose from the use of the vague term "acidity." Very many acids could be present in lubricating oils. Inorganic acids were often present and were always undesirable, but there was a very wide range of organic acids which might be found in a lubricant. Some were injurious, and some, probably, did neither good nor harm; some were very beneficial. Organic acids which had been used were definitely selected for known qualities, and were used in definite proportions, to give the oils definite properties.

Mr. Pentony said it was well known that there was a great difference in the oil consumptions of engines of the same type. He would like to ask Mr. Nicklinson the amount of carbon deposit he found on his pistons, relative to the quantity of oil used per month.

Mr. Landau asked, if any old oil could be used for any old time, and could be bought for any old price, what would be the position of the buyer when he bought what he considered to be a reasonably good oil at a reasonable price. What was "any old price," because we should probably see advertisements saying "buy any old oil from our depot at any old price."

Mr. Evans (Royal National Lifeboat Institution), confirmed what Doctor Ormandy had said about the use of a black cylinder oil. He himself had used it, on and off, since 1897. During the past year he had been using nothing but a black cylinder oil and paraffin in his car. It had been running for 5,000 miles without changing the oil in the sump, and the remarks he had heard that night had saved him 9d., because he intended to clean out the sump on the following day. He had taken some oil out of the sump of an engine which had been running for a long time, and had sent it to be tested, and the report was that, with the exception of a very little carbon and a little water, the oil was identical with the oil that went in. He had carried out some rough oil tests, and had come to the conclusion that nowadays the question of carbon deposit need not be considered from any practical point of view. Before the war it was a serious question, because there were very great variations in carbon content, but now he found so little difference that he was going to discontinue testing for it. An important test from his point of view was to subject samples of the oil, in test tubes about three-quarters filled, to a temperature of 400 degrees F. for 24 hours, after which the amount of evaporation was measured. Whether there was any value in the test he did not know, but what was of value was the viscosity of what was left in the test tube. He complimented oil people on the progress made, because that test was getting almost useless, inasmuch as the results obtained were much the same. Before the war, out of a dozen samples he had had three in which there was solid bitumen or solid something in the test tube. He did not mind what the oil was when it was cold, but what he was concerned with was the viscosity of 200 degrees to 300 degrees Fahrenheit. We must not have decomposition which produced this pitchy residue, otherwise, the engine would not start up.

What Is Real Test?

The author, replying generally to the discussion, asked Mr. Brooker how we were to say which was the best oil among a dozen. Were we to take viscosity, carbonization, or the various physical tests? In fact, we are still trying to find out what is a "better oil." With regard to castor oil, he said that oil No. 6, which contained 2 per cent, was supposed to be prepared by a patent process, in which the castor oil was kept stable and did not separate out. He himself had tried to mix castor oil and mineral oil, but had never succeeded in getting more than 2 per cent to settle in. The balance settled out. That was fairly well understood, but we could reverse the process and get 10 per cent of mineral oil to mix with 90 per cent of castor oil, and get a workable mixture. In reply to Mr. Seear, he agreed that the reduction in wear in the cylinder with No. 2 oil was something to be grateful for, but we had to consider whether the oil upset the cylinders. If they would have lasted nine months instead of six with another oil, then the

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Furnished With Flat-Link Chain or Cable Chain

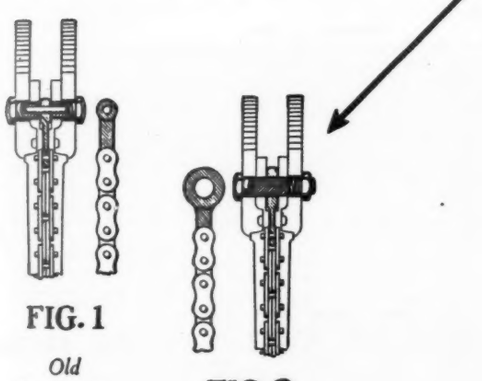

FIG. 1

Old Construction

FIG. 2

Bolt and Nut Construction

Illustration No. 2 shows new bolt and nut construction, while illustration No. 1 shows our old method.

The bolt of the present design is far stronger than chain and swinging link. A strain sufficient to rupture the latter has no effect upon the bolt while the chain link which is forged from high-grade Chrome Vanadium steel is tested to the breaking strain, 2½ times greater that of flat chain, giving increased strength—fewer parts. Jaws that can't spread—and positive safety to the operator.

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J. H. WILLIAMS & CO.

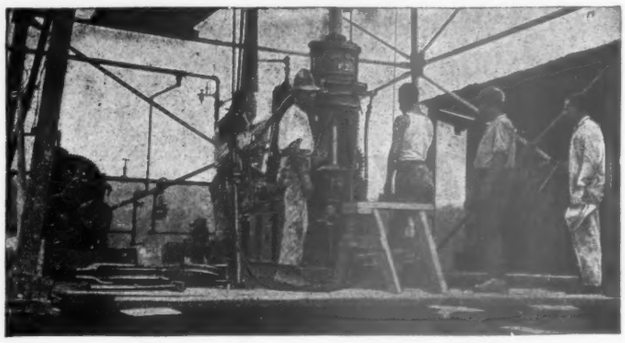
BROOKLYN BUFFALO CHICAGO

WILLIAMS

SUPERIOR DROP-FORGED TOOLS

"VULCAN" CHAIN PIPE WRENCH

26P-1



Diamond Drilling for Oil Has "Arrived"

When the Panuco-Boston Company brought in a well with the Sullivan Diamond Drill in the Tampico field in December, 1921, diamond drilling for oil became a proven success—no longer an experiment.

Today Sullivan Diamond Drills are in successful oil field use in Mexico, Texas, Oklahoma, California, Colorado, Montana, Santo Domingo, South America, etc.

In all formations and in all varieties of oil field drilling, the diamond drill has proved its value.

In furnishing geological data, in low cost for outfit, transportation, power and labor, in drilling speed, in adaptability to drilling conditions,

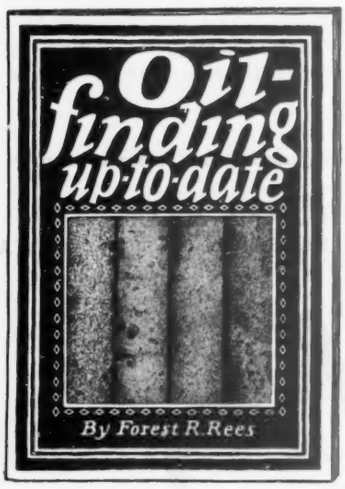
Sullivan Diamond Drills stand foremost.

For deep wildcatting or production, the "P-2" and "KF" heavy duty drills are available, removing cores from 3¾ to 7 inches in diameter, and good depths of 300 to 5,000 feet.

For "structure testing" the Diamond drill is in a class of its own. A Diamond Drill Core of the formation is a perfect record.

Sullivan Coal ProspectingDrills, removing 2-inch core, are recommended. Drilling costs are low.

Over 25 Sullivan Drills are in use in Oklahoma alone on structure testing.



Oil Geology and the Diamond Drill

In this booklet, Mr. Rees, Oil Geologist at Tulsa, explains in simple language the origin of oil bearing formation and why surface appearances or well indications are sometimes deceptive.

He shows how the diamond drill, removing a solid core of all rocks penetrated, enables the geologist to plot structure accurately and to say definitely, "The Oil is Here."

Illustrated with numerous sketches and photographs.

Send for your copy, booklet 15,124 *Catalogue 1580-0*

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Denver	Knoxville	Pittsburgh	St. Louis
Cleveland	London	Salt Lake City	Sydney, N. S. W.
			Vancouver, B. C.

better oil was not commercial, because if we had to take the cylinders down every six months it was no good running them another three months because of the better oil, and then being compelled to take them down again. The saving was not commensurate with the extra cost in this case. Replying to Mr. Redgrove on the question of the ratio of viscosity and temperature, he said that oil No. 4 showed up best in this respect. He did not think specific gravity was any criterion of the lubricating properties. It was only a guide for checking purposes, and perhaps a guide as to the source of oil. Mr. Redgrove had condemned oil No. 7 most strongly, but another concern had used it, and it had given most excellent results in operation. As to high and low viscosity, he had made examinations of oils, and had found that if he took the crankcase temperatures into account, all oils were about equally thin after a matter of half an hour's running. In answer to Major Beaumont, he gave further particulars with regard to the number of engines on which the various oils were used. Some of the oils were used on a large number of engines, and he agreed that definite results could not be obtained unless a large number of vehicles were run. He emphasized most strongly the importance of dealing with a firm of repute, in order that one might know what one was getting. With regard to acidity, mentioned by Mr. Martin, he had never found any injurious effect from a slight amount of acidity in these oils.

NEW KENTUCKY POOLS; WILDCATTING DECLINES

(Continued from Page 124)

the State. At present four are shut down. One is drilling in Whitefield County near Dalton at 600 feet. One dry hole, abandoned at 3,380 feet, was reported near McRae, in Wheeler County, in the south central part of the State, drilled by the Dixie Oil Co., a subsidiary of the Standard Oil Co. of New Jersey.

Kentucky in 1923

Completions in the Kentucky fields for 1923 were by months as follows:

Month—	Comp.	Prod.	Dry	Gas
January	162	2,081	42	3
February	125	2,032	33	11
March	173	2,458	42	8
April	173	3,146	36	9
May	226	3,456	41	7
June	224	4,266	54	6
July	212	2,699	41	13
August	102	3,817	28	2
September	148	4,185	42	7
October	141	1,701	40	5
November	134	1,799	40	5
December	123	2,058	32	4
Total 1923	1,943	33,692	471	80
Total 1922	2,268	32,440	408	69
Difference	325	1,252	63	11

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas
Wayne	40	201	21	0
Wolfe	1	10	0	0
Powell	28	498	3	0
Estill	20	94	4	0
Lee	28	321	1	0
Lawrence-Johnson	187	3,917	2	23
Johnson-Magoffin	298	3,494	10	24
Allen	497	5,049	159	1
Warren	392	6,375	95	4
Barren	99	739	20	0
Simpson	46	833	17	1
Logan	4	0	4	0
Cumberland-Monroe	115	8,998	57	6
McLean	5	0	5	0
Daviess	4	1	3	0
Owsley	15	260	4	7
Hancock	24	274	6	0
Russell	14	1,305	1	0
Clark	1	0	0	1
Lewis	1	0	0	1
Floyd	5	113	2	0
Hopkins	23	469	13	0
Elliott	9	47	4	0
Muhlenburg	5	2	4	0
Ohio	8	67	5	0
Metcalf	16	11	11	2
Green	1	0	0	1
Rowan	1	0	0	1
Marion	1	0	0	1
Pike	2	0	0	2
Laurel	2	100	0	1
Oldham	2	10	1	0
Hardin	2	8	1	0
Owensboro	27	464	7	0
Calloway	2	0	2	0
Union	1	5	0	0
Graves	1	0	1	0
Jefferson	1	0	1	0
Knott	2	3	0	1
Meade	1	0	0	1
Clinton	1	20	0	0
Breckenridge	1	0	1	0
Martin	2	0	1	1
Henderson	2	0	2	0
Crittenden	1	0	1	0
Montgomery	2	4	0	0
Adair	1	0	1	0
Owen	1	0	1	0
Morgan	1	0	0	1
Total 1923	1,943	33,692	471	80

Tennessee in 1923

The Tennessee completions for 1923 were distributed by months as follows:

Month—	Comp.	Prod.	Dry	Gas
January	6	5	4	0
February	6	195	4	0
March	2	0	1	0
May	5	0	3	1
July	3	0	3	0
August	5	1,016	2	0
September	1	0	1	0
October	8	500	7	0
November	5	19	4	0
December	12	35	11	0
Total 1923	54	1,684	41	1
Total 1922	32	75	15	1
Difference	22	1,609	26	0

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas
Clay	21	1,119	17	0
Dickson	1	0	1	0
Robertson	1	5	0	0
Scott	4	11	3	0
Campbell	1	0	1	0
Sumner	10	8	8	1
Cheatham	1	0	1	0
Wayne	1	0	1	0
Montgomery	1	0	1	0
Carroll	1	0	1	0
Lawrence	3	4	1	0
Shelby	3	0	1	0
Warren	3	0	3	0
Pickett	2	535	0	0
Pickett	2	235	0	0
Grundy	1	0	1	0
Total	54	1,684	41	1

Mississippi in 1923

The completed wells in Mississippi during the year of 1923 were by months as follows:

Month—	Comp.	Prod.	Dry	Gas
January	9	0	8	1
August	3	0	3	0
September	1	0	1	0
Total	13	0	12	1

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas
Jackson	2	0	2	0
Copiah	1	0	1	0
Jefferson	1	0	1	0
Lowndes	1	0	1	0
Madison	1	0	1	0
Warren	1	0	1	0
Chickasaw	1	0	0	1
Panola	1	0	1	0
Hinds	1	0	1	0
Tallahasse	1	0	1	0
Lee	2	0	2	0
Total	13	0	12	1

Georgia in 1923

During 1923 but two wells were reported completed in Georgia. One was drilled in September and the other in October, both being located in Wilcox County, and dry.

Alabama and Florida are both in the stage of development with a number of drilling wells in each State and some that are at a stage where something soon should be known of the tests. No completions were reported in either State for 1923.

OIL SECURITY PRICES DECLINED IN 1923

(Continued from Page 44)

a basis for a new high point for the oil stock price average, that is, above 65.

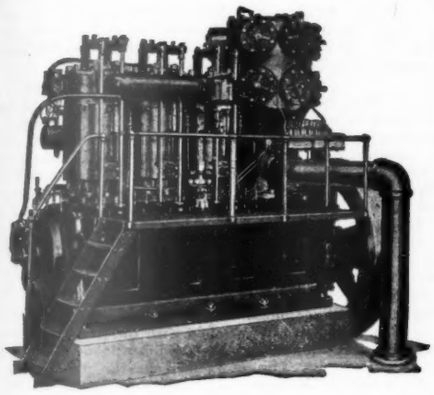
The two factors which will probably govern the trend of the average are (1) the volume of business done by the companies represented, and (2) the prices received for their products. The factor of prices will be governed by the supply as compared with the demand. The opening up of another field such as Powell would tend to keep down prices in 1924, and no one now can anticipate such a development.

Provided general business conditions in 1924 are favorable, so that oil consumption increases; and provided no new big fields are opened up during 1924, sound oil stocks should be considered cheap now. A rise in securities would only reflect a healthy growth and prosperity in the petroleum industry.

KILLED BY FALLING BAILER

CASPER, Wyo., Jan. 26.—Frank M. Lee, aged 50, of Marion, Ind., a field worker of the Ohio Oil Co., was killed by a bailer falling from the derrick.

The Reeves Vertical Gas Engine—Compressors For Gas Booster Plants



Engine Sizes:
40 H. P. up to 250 H. P.

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60 H. P. up to 160 H. P.

A few of the reasons why leading companies and engineers are purchasing the Reeves Gas Engines and Compressors.

They know the Reeves unit is not an experiment, having proven its reliability and worth over a period of about twenty years successful service.

Account of the simplicity of operation; low fuel and maintenance cost per horse power. One user just reported having operated last four units 16 months without shutdown.

All Compressors equipped with "Hope" Biplane, Patented, easy operating, high speed Valves.

Saving in installation time partly pays for unit.

Saving in plant construction cost from 20 to 50%, depending on location.

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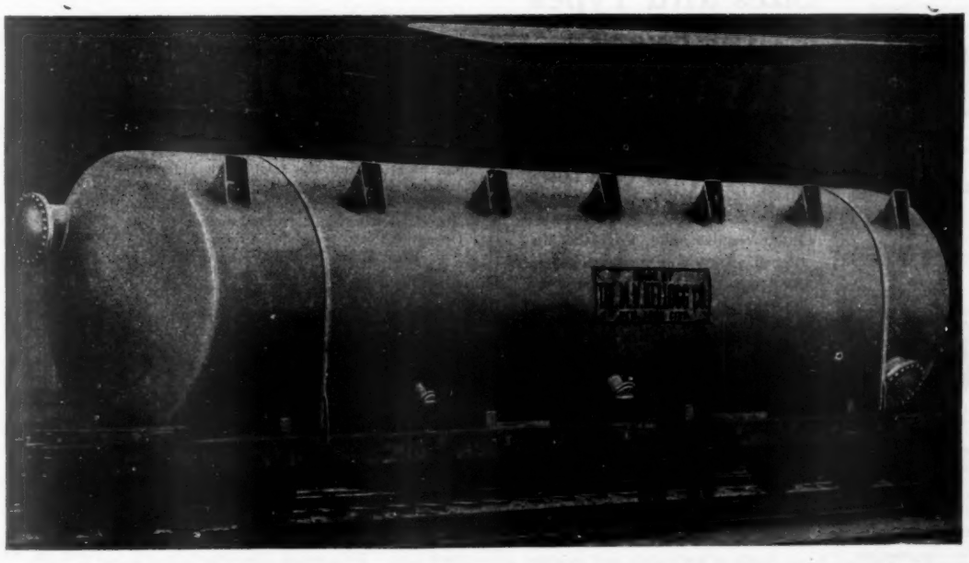

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Truscon Standard Buildings are permanent; the side wall panels and roof are manufactured from 18-gauge Truscon Alloy Steel—a material that has proven its superior durability. The maximum of daylight and ventilation is obtained with Truscon Steel Windows.

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Lengths: Multiples of 8'. Heights 8'-1" to 21'-5".
Any arrangement of doors and windows.
Lanterns, canopies and lean-tos as desired.

TYPE 1 (Clear Span) with Lantern
Widths: 8'-12'-16'-20'-24'-28'-32'-40'-48'-60'-68'

TYPE 2 (2 Bays)
Widths: 40'-48'-50'-56'-60'

TYPE 3 (3 Bays) with Lantern
Widths: 56'-60'-64'-68'-72'-76'-80'-84'-88'-90'-96'-98'-100'-106'-108'-116'

TYPE 3M (Monitor)
Widths: 60'-64'-68'-72'-76'-80'-84'-88'-90'-96'-98'-100'-106'-108'-116'

SAWTOOTH TYPE
Widths: Any multiple of 28'

Sizes and Types for Every Requirement

The countless combinations of standard units, together with the great number of sizes and types, make each building distinctly individual and exactly fitted to particular requirements. Furnished in pitched, monitor or sawtooth roofs; any arrangement of doors and windows.

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Fine - appearing, business - getting buildings, Truscon Standard Filling Stations are easily and quickly erected. Can be put up on leased ground with safety because they can be taken down and re-erected with a small amount of labor. Fireproof, permanent, and adaptable to individual requirements.

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Warehouses and Sales Offices from Pacific to Atlantic
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Canada: Walkerville, Ont. **Export Division: New York**

NUMEROUS PIPE LINES CONSTRUCTED IN 1923

(Continued from Page 42)

trict, through El Dorado and Haynesville, to the Ardis tank farm, just south of Shreveport. The line is constructed of 10-inch pipe and is approximately 85 miles in length. The work of laying the line across Red River was one of extreme difficulty on account of the shifting quick sands for which the river is noted. It was necessary to lay the line for a distance of 2,175 feet to a depth which would provide for possible changes of the channel such as have occurred frequently in times past, and to protect it from dangerous currents during flood waters.

A number of small lines have been built in the Arkansas Field by individuals and independent companies. The Fortuna Oil Co. has about 25 miles of gathering lines between its well and its tank farm in the El Dorado Field. The Root Refinery laid 5 miles of 4-inch line from El Dorado to the East Field. The Hughes Pipe Line Co. has about three miles of 4-inch line in the north end of the East El Dorado Field, extending to its tank farm on the Rock Island Railroad. McMillan, Fehlman & Oliver built 10 miles of 4-inch line through the Norphlet district, between El Dorado and Smackover.

The Shreveport Producing & Refining Co. extended their line from the Bull Bayou Field in De Soto Parish, a distance of 10 miles, south to the Dolet Hills district, laying a 4-inch line.

Gas Line Construction

Opening of the Webster Parish gas field resulted in the building of two new pipe lines. The Fortuna Oil Co. laid a 6-inch line from near Sarepta to Haynesville, a distance of 17 miles, and is supplying the field with gas for drilling operations.

The Atlas Oil Co. laid a line from the Webster Parish gas field to Shreveport, a distance of 45 miles, thus furnishing the city with an entirely new source of supply. The line consists of 10 miles of 12-inch and 33 miles of 8-inch.

The El Dorado Gas Co. built during the year between 60 and 70 miles of 6-inch and 8-inch lines from the different fields around El Dorado and is supplying gas for domestic and manufacturing purposes as well as for drilling operations throughout the field.

The Natural Gas & Petroleum Corp. has built during the past year approximately 75 miles of new line, from 2- to 8-inch, and has distributing lines throughout the entire field from Louann to El Dorado.

Pipe Lines in West Kentucky

The Indian Pipe Line Corp., of Lawrenceville, Ills., at the close of the year was completing a trunk line from its Owensboro, Ky., station in Daviess County to its station at Bowling Green in Warren County, a distance of 63 miles. The first 20 miles extending from its Morgantown station at Bowling Green to the Green River is 4-inch. The remaining 43 miles is 6-inch.

From the Morgantown station in Warren County to the company's station at Scottsville, in Allen County, 25 miles of line is being laid. The first 23 miles from Scottsville toward Bowling Green will be 3-inch and the other 3 miles will be 4-inch. This trunk line which in all, will total from Scottsville to Owensboro a distance of 88 miles, will pass through Daviess, Ohio, Butler, Warren and Allen Counties.

In 1922 the Indian Pipe Line Corp. built a 6-inch line from its Owensboro station to the refineries at Lawrenceville.

The Central Producing & Refining Co., which recently completed a refinery at Bowling Green, in Warren County, built a 3-mile 2-inch line from its loading racks at Oak Hill in the new Hopkins County Field to connect with production at Morton's Gap. The same company finished a line from its Davenport Station to the new extension of the Sandidge Pool, to the northwest, consisting of 6 miles of 2-inch line.

The Paragon Development Co. completed a trunk line from Glasgow, in Barren County, to Neeley's Ferry in Cumberland County. It consists of 10 miles of 2-inch and 6 miles of 3-inch. Lines were also laid from its tank farm at Neeley's Ferry to Bear Creek, Sulphur Creek and Kettle Creek. In all 29,272 feet of 3-inch and 93,187 feet of 2-inch line were laid.

Pipe Line Building in Wyoming

The trunk line from Salt Creek to Parco, Wyo., by the Producers & Refiners Corp. is an 8-inch line to Casper, then a 6-inch line the rest of the way. The Casper-to-Salt Creek part is about 38 miles in length and the Casper-to-Parco line is about 100 miles long. It has six pump stations.

The Fargo Oil Co. built a 6-inch pipe line from the Poison Spider Field in Natrona County to Casper, a distance of about 28 miles, to carry the black oil production of the Poison Spider to a market. A gas line already exists in the Poison Spider Field that carries the gas to Casper for domestic and manufacturing purposes. The Fargo oil line has two pump stations.

The Sinclair Pipe Line Co. is constructing a pipe line from Teapot, Wyo., to Kansas, where a connection will be made with the transcontinental lines from the Mid-Continent. This line is about finished to the Wyoming-Nebraska line and the work of completing the rest of the stretch from this State to Kansas is being pushed rapidly. It is an 8-inch line with 10-inch loops and is doubled 8-inch from Teapot to the Clayton tank farm on the railroad near Glenrock, Wyo. This latter part of the line has been in operation for many months.

The New York Oil Co. laid a gas line 18 miles from the Poison Spider Field to the Boone Dome near Powder River, Natrona County. This is a 6-inch line and is to supply gas in case of need, from the wells of the New York Oil Co. on the Boone Dome for the city of Casper.

The Midwest Refining Co. laid a 2-inch oil line from the Notches Dome north of Powder River, in Natrona County, to the railroad at Lox Station, to carry the Notches oil. This is a distance of 10 miles.

The Illinois Pipe Line Co. laid an 8-inch trunk line from Salt Creek to a junction with the railroads at a point called Illco. This line was later extended to Casper where it connects with the Big Muddy Field line of the same firm. The line from Illco to Salt Creek is about 30 miles and from Illco to Casper is 10 miles.

The Midwest Refining Co. has just completed an 8-inch gas line from Salt Creek to Casper, a distance of about 40 miles, that is to carry gas from the field to the refineries at Casper. This line will take the residual gas after the absorption plant at Salt Creek has removed the gasoline.

The Midwest Refining Co. has laid a 4-inch line from Salt Creek to Casper to carry the gasoline from the Salt Creek gasoline plant to the blending plant at the Casper refinery. This is an all-welded line and is the longest welded line in the world, a distance of 42 miles.

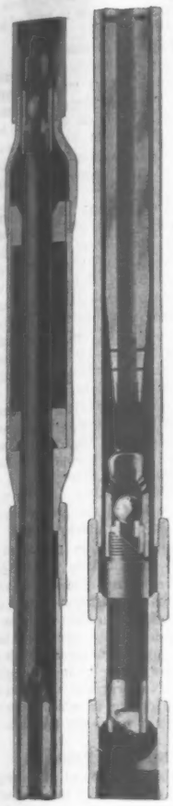
The Producers & Refiners Corp. has a gas line projected in the Baxter Basin Field, in Sweetwater County, where the firm is drilling some wells in proven gas territory and this line will carry gas from Baxter Basin to Rock Springs, a distance of 10 miles. The pipe for the line is at Rock Springs, size 4- and 6-inch.

Short Lines in California

California's pipe line construction in 1923 included over 20 new lines, many of them very long. The longest stretch of new line was 18 miles.

The Standard Oil Co. of California laid an 8-inch line from Northam to Ferndale Segundo refinery, a distance of 12 miles; an 8-inch line from Huntington Beach to Northam Station, 12 miles; a 6-inch gas line from Northam to Santa Fe, 5 miles, and an 8-inch oil line from Santa Fe to

(Continued on Page 162)



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A WORKING BARREL of simple, sturdy construction that will pump off your well from any depth with the least amount of trouble and expense. The time saved and the increase of production will within a short time pay for the initial expense.

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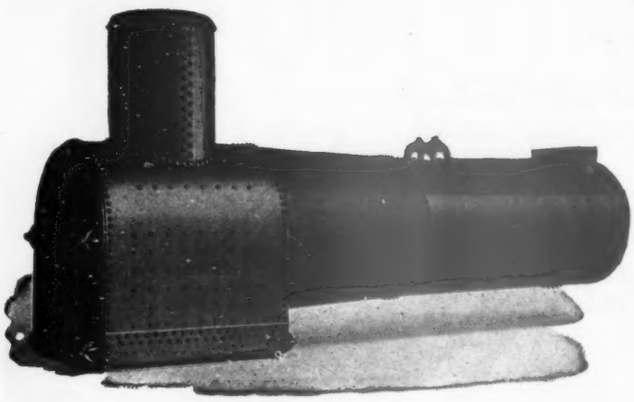

KEWANEE

Oil Country Boilers

The same high grade materials and the same excellent workmanship that have made it possible for Kewanee Steel Boilers to be leaders in the field for the past 35 years, go into every Kewanee Oil Country Boiler.

They are constructed of steel, firmly riveted and caulked and are built according to the code for building adopted by the American Society of Mechanical Engineers, which code is now required in the State of Oklahoma. Every Kewanee Boiler will produce all that its rated capacity calls for. You are not experimenting when you use Kewanee but are buying a boiler that has been produced after all of these years of continuous building.

Hundreds of these boilers are and have been in use in the oil fields and have given the owners excellent service.

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KEWANEE, ILLINOIS
Makers of Steel Boilers, Steel Tanks, Water Heating, Garbage Burners, Tabasco Water Heaters
Sold by International Supply Co., Tulsa

GASOLINE TAXES SHOW MOTOR CONSUMPTION

(Continued from Page 48)

terest on bonds and for maintenance of roads.

North Dakota: Two-cent tax, goes to general fund.

Oklahoma: One-cent tax, collected from wholesalers distributed to highway fund and prorated to the counties.

Oregon: Tax 3 cents, increased from 1 cent collected from importers, all being used for highway purposes.

Pennsylvania: Tax increased from 1 to 2 cents and collected from dealers. Of this fund, 25 per cent goes to the counties and 75 per cent to the general fund of the State.

South Carolina: Tax 3 cents, an increase from 1 cent. One cent goes to the general fund of the State and 1 cent to the counties for roads and 1 cent to highway department for maintenance.

South Dakota: Two-cent tax, an increase from 1 cent, collected from the retailer. The highway commission has full charge of the fund.

Tennessee: Tax of 2 cents collected from wholesaler and all placed to the credit of the highway department for construction.

For School Fund

Texas: One-cent tax collected from the wholesaler, goes to the State highway fund, except 25 per cent, which goes to the school fund.

Utah: Two and one-half-cent tax to be used to pay interest and sinking fund of State bond issues and for maintenance of roads.

Vermont: One-cent tax, distributed by the State highway board for laying dust and resurfacing main roads.

Virginia: Three-cent tax, collected from the wholesaler, 2 cents of which goes to the State system of roads and 1 cent to minor roads.

Washington: Two-cent tax, an increase from 1 cent, all of which is applied to State funds.

West Virginia: Two-cent tax.

Wyoming: One-cent tax, collected from wholesalers and all for State highways.

It will be seen that there has been a general disposition to increase the tax up to 3 cents and that in numerous instances the money so collected goes to purposes other than the building and maintenance of roads, although when this class of taxation was first advocated it was all to be for public roads by which the automobilist was in that way to pay for the use he had from these roads. In other words, once the tax collector began tracking petroleum as a means of raising revenue he was led to increase the amount of tax started with and then to divert the fund for a variety of purposes. Eventually the question will arise in respect to where this taxation and the purpose for which it is to be applied will end.

MINE BUREAU SHOWS USE OF GAS HEATERS

(Continued from Page 48)

so that the flame does not come into contact with a metallic surface, do not produce carbon monoxide in appreciable quantities. Heaters of this type should not be permitted to burn so that the flame touches metal surfaces. If the burner is twisted or turned so that the flame impinges on a metal surface, dangerous quantities of carbon monoxide are produced and connection to a flue becomes absolutely necessary. Heaters of this type should be protected from drafts, which cause the flame to come in contact with the metal reflecting surfaces and thus give off carbon monoxide. Nor should one of these heaters be supplied with so much gas that the flames roar or extend outside the heater.

Heaters of the metal inclosed blue flame type burning under proper conditions do not produce detectable quantities of carbon monoxide. The gas flow should not be increased so that the flame extends through the holes of the inside metal grid surrounding the burner, because carbon monoxide is produced in this way.

Type of Heaters

Asbestos back yellow blue flame heaters having solid metal guards in front of the flame produce dangerous quantities of carbon monoxide and should be connected to a flue whe in use. If such heaters are used without a guard the liberation of carbon monoxide is greatly reduced.

Radiant nonluminous flame heaters, when operated so that the radiants glow only three-fourths of the length from the bottom to the top and when adjusted so as to entrain eight or more volumes of primary air, can be safely used without a flue in a well ventilated room. If the heater is so operated that the radiants glow the entire length, or is so adjusted that the amount of primary air is small, it should be connected to a flue.

Tests of a heater provided with a canister containing a chemical to remove noxious gases did not show that the use of the canister had any appreciable effect on the liberation of carbon monoxide or carbon dioxide, but they did show that the canister removed the greater part of the "gas fumes" or "aldehyde odors."

Guards should not be put around a heater unless adjusted to a proper distance from the burner and provided with plenty of openings through which air may be easily drawn into the flame.

Heaters should be so constructed that an ample supply of secondary air is drawn into the flame to insure complete combustion. Natural gas should not be burned in any device in which proper arrangement is not made for the admission of secondary air.

Essential Point

The most essential point in the design of the heater is to insure that the heater burns the gas completely to carbon dioxide and water vapor.

When a heater is connected to a flue, a large part of the heat liberated by the combustion of the gas goes up the flue and so is lost. To keep this loss to a minimum, there should be a damper in the flue; after the heater is lighted the damper should be gradually closed until the products of combustion move slowly into the flue—a matter that can be determined by watching the flame of a piece of burning paper placed near the flue or by blowing tobacco smoke into the space above the flame and noting whether the smoke is drawn into the flue or comes out into the room. Another method of saving a large part of the heat usually lost up the chimney is to use a longer flue connection with several bends in it, and thus enable the hot gases from the flame to liberate much of their heat into the room before they reach the chimney.

Gas fumes or odors in a room in which a natural gas heater is burning may or may not indicate the presence of carbon monoxide. Heaters burning with a yellow flame and at a lower temperature may liberate gas fumes but produce very little carbon monoxide. On the other hand heaters burning gas at a high temperature may give off very slight odors and yet liberate carbon monoxide. Tests showed that when the gas fumes were not detectable by smell carbon monoxide was not given off in quantities dangerous to health and safety; a slight or distinct odor may indicate danger with one type of heater and not with another. A strong odor is evidence that enough carbon monoxide may be present to cause death in a very short time.

MOTOR LINE TO OIL FIELDS

SAN ANGELO, Tex., Jan. 23.—Motorized rail passenger transportation on the Orient between Sweetwater and Big Lake, extending possibly to Abilene, primarily to better serve the new oil field in Reagan and Crockett Counties, is considered virtually certain as a result of a conference here between Receiver W. T. Kemper and General Manager E. B. Shaufler of the Orient lines, citizens of towns along the Orient and oil operators

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NUMEROUS PIPE LINES CONSTRUCTED IN 1923

(Continued from Page 158)

Los Angeles Harbor, 14 miles. The Huntington and Northam Station line was begun in 1922 and completed in 1923.

The Associated Oil Co., laid an 8-inch line from Huntington to Watson, via Long Beach, a distance of 18 miles; 6-inch line from Long Beach to Watson, 5 miles; 8-inch line from Santa Fe Springs to Watson, 11 miles; a 6- and 8-inch line from Watson to Wilmington, 3 miles and a 6-inch from Torrance to Wilmington, 5 miles.

The Union Oil Co.'s pipe line construction included a 6-inch line from Compton to Watson, 3 miles and a 6-inch line from Torrance to Wilmington refinery, 5 miles

The Shell Oil Co. of California laid an 8-inch line from Long Beach to its tank farm at Watson, 5 miles; a branch from Santa Fe to Watson tank farm, 11 miles was laying a 6-inch line from Torrance to Watson tank farm, 3 miles at the close of the year, and had completed an 8-inch line from Watson to Wilmington, 3 miles. The General Petroleum Corp. laid a 6-inch line from Santa Fe Springs to Los Angeles, 14 miles.

Those were the most important lines laid in the State during the past year, although several of the smaller oil companies were working on pipe line systems and one job was held up. The Blue Tank Group is working on its pipe line system while C. C. Julian, now the Julian Petroleum Corp., has a line from Torrance to its tank farm, about 2 miles away and another from Santa Fe Springs to Norwalk, about 2 miles from the field. Both are 6-inch lines and connected with Wilmington (tidewater) with another 6-inch for tanker loadings, if so desired.

Most of the operating companies in California have made extensions in gathering lines in each field and at tank farms. No mention is made above of the connecting line built by the General Petroleum Corp. from its pipe line to the Standard Oil Co.'s property at Wheeler Ridge. The Standard has developed production at this point but since the General Petroleum line from the San Joaquin Valley to Los Angeles was only a few miles away, it was connected with the Standard tanks and the General Petroleum Co. is running the Standard's oil.

Little New Work in the East

Very little pipe line building was accomplished in the Eastern Field during 1922. The Southwest Pennsylvania, Eureka or Buckeye Pipe Line Co. had no important extensions.

The Pure Oil Pipe Line Co. reports 3½ miles of 2-inch from Toothman to Armstrong Station, Belmont County, Ohio; 3½ miles of 2-inch from Jefferson County to Gould Station; 2 miles of 2- and 3-inch from Bremen, Fairfield County, Ohio, to the Kennedy farm.

GROSS PRODUCTION TAX AMENDMENT PROTESTED

OKLAHOMA CITY, Okla., Jan. 28.—A committee of the Mid-Continent Oil & Gas Association, headed by Secretary H. H. Smith of Tulsa, recently appeared before a committee of the Legislature to protest against a proposed amendment to the gross-production tax law that would provide for collecting tax from marketers instead of producers and royalty owners, and any amendment that would alter the present method of collection by the State auditor.

"To collect this tax from the pipe line concern," said Mr. Smith, "might give nonresident producers and royalty owners a chance to evade payment. As to manner of collection, the committee feels that if collections are not being made properly, it is the fault of the collecting department and not of the law. Last year over $8,000,000 was collected in 3 per cent gross production tax at a cost of less than 1 per cent."

Exploration for Oil Is Being Extended Into Wheeler County

SHAMROCK, Tex., Jan. 28.—The migration of oil explorations westward from Sayre, Okla., and eastward from the Amarillo, Tex., district has resulted in a concentration of explorations in Wheeler County, and practically no section of the county has been left out in the vigorous scramble for leases. Completion of several gassers at comparatively shallow depths and the oil discovery by The Texas Co. near the center of Gray County on the west have intensified interest. About 10 definite locations have been made in Wheeler County and more than that number of blocks of leases has been assembled for tests.

Whittington and associates, who found formation at 1,980 feet that made 100,000,000 feet of gas, will bradenhead the gas and about February 1 resume drilling in search of a lower producing level. At 1,537 feet George Henshaw and associates of Oklahoma City got a sand making 2,000,000 feet. The Henshaw location is in the center of the southeast of Section 128, Block 23, 6 miles west of the Schenck well, in which gas was first found in the county, and 3 miles southwest of the Whittington well.

Although this territory is 400 feet lower above sea level than Amarillo, the lime is entered about 400 feet higher than in the Amarillo territory. In the latter it is found at about 1,900 feet and in the former about 1,500 feet. What may have become of the lime in the eastern part of the county is an interesting geological speculation. It was found at about 1,450 feet in the Schenck well, a few miles north of Shamrock. Twelve miles east of that location the Skelly Oil Co. had found no lime down to 3,300 feet, according to oil scouts. The lime formation is said to have been missing in the 3,500-foot test being abandoned by the Buffalo Oil Co. near Texola and near the Texas-Oklahoma line southeast of Shamrock.

Among recent visitors in this territory were Earl Bryan and William Armstrong of Oklahoma City, who contemplate taking over and completing the Ketchelhoffer well about 17 miles west of Shamrock. This was drilled to about 1,000 feet by Chicago men, who set the 10-inch casing at that depth.

C. H. Clark and associates of Wichita Falls have a location on the Clark-Bullington ranch and will drill with cable tools in Section 5, north of the North Fork of Red River, about 20 miles northwest of Shamrock. Sheddon and associates of Tulsa are moving tools for a cable test in the center of the northeast of Section 70, 4 miles northeast of Shamrock and 5 miles southeast of the Schenck gas well. Bussey and others of Wichita Falls expect to drill in Section 37 of Block 24.

TILLMAN COUNTY TEST PASSES OUT OF PERMIAN

FREDERICK, Okla., Jan. 28.—Shales, limes and sands and two showings of oil found below 600 feet in the test well being drilled by A. L. Spears of Oklahoma City in the southwest quarter of Section 10-4s-18w, Tillman County, appear to confirm the belief of drillers that at that depth the drill passed out of the Permian formation. Since this test is on the first cross fold west of Deep Red Creek in this territory and was located with reference to a supposed extension of the Burkburnett structure, the log is of interest to oil men. Blue shale mixed with sand is the formation at 1,100 feet, the bottom of the hole. Oil showings in thin sands were found at 945 feet and 1,002 feet. The test is three-quarters of a mile from Red River, 12 miles northwest of Electra, 14 miles west of the Hirschi Pool and 23 miles west of the Burkburnett northwest extension.

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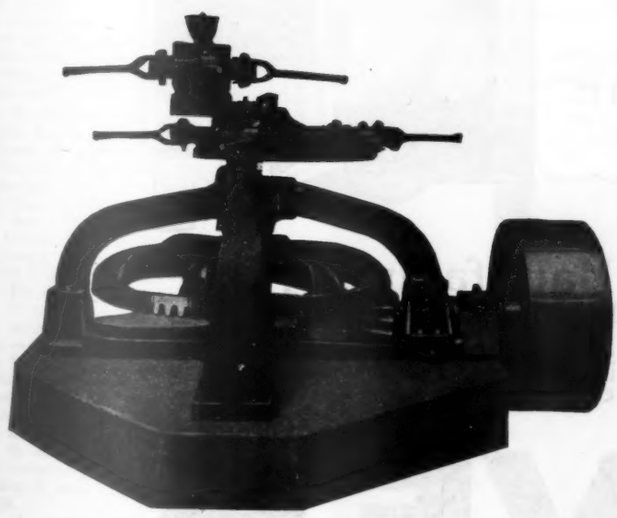

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Write for Bulletin No. 25

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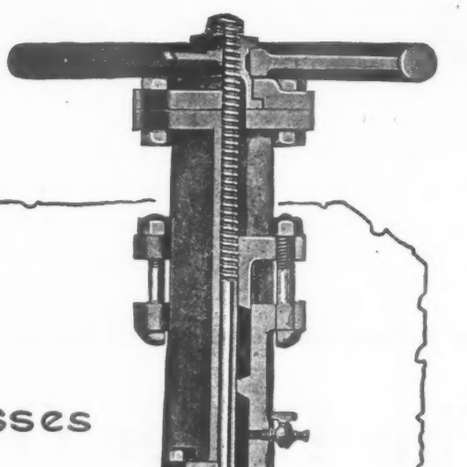

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VALVES

Crude Petroleum Price Changes in 1923

Year Started With an Advancing Market, but Early Spring Saw Trend Change, With Reductions Experienced in All Fields

(*Tables Start Page 116*)

The year 1923 was one of the most changeable in regard to crude oil prices in the history of the oil industry. Starting out with an advancing market in most fields the trend changed early in the spring and by late fall practically every field in the United States had experienced several reductions in price. Just before the end of the year the trend again turned and late in December several important advances were made.

For the entire year crude price changes were made in one or more fields on 105 days. The oil fraternity is constantly having cause to refer to the price changes of previous years. In order that the year 1923 might be covered in this respect in an accurate and concise form, The Oil and Gas Journal is giving in chronological order these changes together with tables of crude prices covering every important field in the United States. This will enable the reader at a glance to determine the price prevailing in any field on any date.

Unless otherwise noted the dates given in the table represent the advance or decline first posted by a major purchaser of crude oil in the field designated. Due to the lack of uniformity in price setting among the major buyers in several fields, notably those of North Texas, Oklahoma and Kansas, it has been necessary to enlarge the tables so as to give more than the price of one company in several instances.

Below in chronological order are the changes with the tables following:

Jan. 3.—Standard Oil Co. of Louisiana posted following prices for Smackover (La.) crude: 26° and above, 75 cents; below 26°, 30 cents.

Jan. 6.—Standard Oil Co. of California reduced price of crude based on gravities. Base price remained the same with reductions on other gravities varying from 1 to 50 cents.

Jan. 13.—Prairie Oil & Gas Co. advanced Oklahoma, Kansas and North Texas crudes 10 cents and posted new price of $2.10 for crude of 41 gravity or better. Major purchasing companies with exception of Magnolia Petroleum Co. met price the same day.

Jan. 15.—Magnolia Petroleum Co. in Oklahoma, Kansas and North Texas advanced crude of 31° to 32.9° gravity, 10 cents and met Prairie prices for higher gravities; also posted price of $1.60 for Thrall (Tex.) crude and $1.10 for Corsicana light. Ohio Oil Co. advanced Lima, Indiana, Wooster, Illinois, Princeton, Plymouth, Waterloo (of eastern district) and Grass Creek, Elk Basin, Lance Creek, Big Muddy, Mule Creek, Rock Creek (Wyoming) crudes 10 cents and posted following prices for Sunburst (Mont.) crude: 28° and below, 80 cents; 28° to 33.9°, 90 cents; 34° and above $1; Candian crudes advanced 10 cents; Midwest Refining Co. advanced Salt Creek and other Wyoming and Montana crudes 10 cents.

Jan. 16.—Seep Purchasing Agency advanced Pennsylvania, Cabell and Somerset crudes 10 cents and Corning crude, 25 cents.

Jan. 17.—Prairie Oil & Gas Co. advanced Oklahoma, Kansas and North Texas crudes 10 cents. Advances met by major purchasing companies with exception of Magnolia Petroleum Co.

Jan. 18.—Magnolia Petroleum Co. advanced Healdton (Okla.) crude of below 28° gravity and Corsicana heavy (Texas) crude 5 cents, and all other grades of Oklahoma, Kansas and North Texas crudes 10 cents; increases included Thrall (Texas) and Corsicana light crudes which are purchased on a flat basis. Ohio Oil Co. advanced Lima, Indiana, Wooster, Illinois, Princeton, Plymouth, Waterloo, (eastern fields) and Grass Creek, Elk Basin, Lance Creek, Big Muddy, Rock Creek, Sunburst (Wyoming and Montana fields) 10 cents. Midwest Refining Co. advanced Salt Creek, Osage, Cat Creek and other Wyoming-Montana fields in which it buys, 10 cents. Seep Purchasing Agency advanced Pennsylvania, Cabell and Somerset crudes 10 cents. Standard Oil Co. of Louisiana advanced all grades of northern Louisiana and Arkansas crudes 10 cents. Canadian crudes advanced 10 cents by Imperial Oil, Ltd.

Jan. 19.—Sinclair Crude Oil Purchasing Co. adopted Magnolia Petroleum Co.'s scale of prices for Healdton (Okla.) crude.

Jan. 23.—The Texas Co. advanced Mexia (Texas) crude 25 cents and posted price of $2.20 for Currie (Texas) crude of 41° gravity or better.

Jan. 26.—Standard Oil Co. of Louisiana advanced all grades of northern Louisiana and Arkansas crudes 10 cents.

Jan. 27.—Prairie Oil & Gas Co. advanced all grades of Oklahoma, Kansas and North Texas crudes 10 cents. Increase met by all major purchasing companies with exception of Magnolia Petroleum Co.

Jan. 29.—Magnolia Petroleum Co. advanced Oklahoma, Kansas and North Texas crudes 10 cents with exception of 28° to 30.9° gravity which was advanced 5 cents and below 28°, which was not changed. Ohio Oil Co. advanced Grass Creek, Elk Basin, Lance Creek, Big Muddy, Mule Creek and Sunburst (Montana and Wyoming fields) crudes 10 cents. Midwest Refining Co. advanced Salt Creek, Osage and other Montana and Wyoming fields in which it buys, 10 cents. Seep Purchasing Agency advanced Pennsylvania, Cabell and Somerset crudes 10 cents.

Jan. 30.—Seep Purchasing Agency advanced Corning (Eastern) crude 15 cents. Standard Oil Co. of Indiana advanced all grades of northern Louisiana and Arkansas crudes 10 cents.

Jan. 31.—Ohio Oil Co. advanced Lima, Indiana, Wooster, Illinois, Princeton, Plymouth and Waterloo crudes 10 cents. Canadian crude advanced 10 cents.

Feb. 1.—Seep Purchasing Agency posts new price of $3.80, representing a 25-cent increase, for Bradford-Allegany crudes and advanced other Pennsylvania crudes, Cabell and Somerset crudes 10 cents. The Texas Co. advanced Currie and Mexia crudes 10 cents.

Feb. 2.—Prairie Oil & Gas Co. advanced Oklahoma, Kansas and North Texas crudes 10 cents. Advance met by all major purchasing companies with exception of Magnolia Petroleum Co., which met The Texas Co. price of Feb. 1 for Mexia crude and advanced Corsicana light (Tex.) 10 cents. Midwest Refining Co. advanced Salt Creek, Osage, Cat Creek and other Wyoming-Montana fields in which it buys, 10 cents. The Texas Co. advanced Mexia and Currie crudes 10 cents.

Feb. 3.—Magnolia Petroleum Co. advanced all grades of North Texas, Kansas and Oklahoma crudes 10 cents, with the exception of grades of below 28° and from 28° to 30.9° gravity, which were not changed. Same company met The Texas Co.'s latest price for Mexia crude. Standard Oil Co. of Louisiana advanced all grades of north Louisiana and Arkansas crudes 10 cents. Seep Purchasing Agency advanced Bradford-Allegany crudes 10 cents. Ohio Oil Co. advanced Grass Creek, Elk Basin, Lance Creek, Big Muddy, Mule Creek, Rock Creek and Sunburst crudes 10 cents.

Feb. 5.—Ohio Oil Co. advanced Lima, Indiana, Wooster, Illinois, Princeton, Plymouth and Waterloo crudes 10 cents. Canadian crudes advanced 10 cents.

Feb. 8.—The Texas Co., Humble Oil & Refining Co. and other major purchasing companies advanced Gulf Coast crudes 25 cents. Seep Purchasing Agency advanced Pennsylvania, Bradford-Allegany, Cabell and Somerset crudes 10 cents.

Feb. 10.—Prairie Oil & Gas Co. advanced all grades of Oklahoma, Kansas and North Texas crudes 10 cents. Latter advance met by major purchasing companies with exception of the Magnolia Petroleum Co. The Texas Co. posted flat price of $1, representing a 25-cent increase for all Healdton, Okla., crude it buys. Sinclair Crude Oil Purchasing Co. withdraws its quotations on Healdton crude. The Texas Co. advanced Caddo, De Soto, Bull Bayou and Crichton crudes 10 cents; also advanced Mexia and Currie crudes 10 cents. Ohio Oil Co. advanced Grass Creek, Elk Basin, Big Muddy, Lance Creek, Rock Creek, Mule Creek and Sunburst crudes 10 cents. Midwest Refining Co. advanced Salt Creek, Cat Creek and all other Montana and Wyoming fields in which it buys, 10 cents.

Feb. 12.—Standard Oil Co. of Louisiana advanced all grades of northern Louisiana and Arkansas crudes 10 cents. Magnolia Petroleum Co. advanced Oklahoma, North Texas and Kansas crudes of below 28° gravity 15 cents, 28° to 30.9° gravity 30 cents and advanced all other grades 10 cents; same company advanced Mexia crude 10 cents.

Feb. 13.—Ohio Oil Co. advanced Lima, Indiana, Wooster, Illinois, Princeton, Plymouth and Waterloo crudes 10 cents. Magnolia Petroleum Co. advanced Corsicana light, Corsicana heavy and Thrall (Tex.) crudes 15 cents. Canadian crudes advanced 10 cents. The Texas Co. posted quotation for Smackover (Ark.) crude. Quotations same as Standard Oil Co. of Louisiana.

Feb. 15.—Seep Purchasing Agency advanced Pennsylvania Bradford-Allegany crudes 25 cents, Cabell, Somerset and Corning crudes 15 cents and Ragland 10 cents.

Feb. 17.—Prairie Oil & Gas Co. advanced all grades of Oklahoma, Kansas and North Texas crudes 10 cents. Quotations met by major purchasing companies. Magnolia Petroleum Co. advanced grade of below 28° gravity and 28° to 30.9° gravity 5 cents and all other grades 10 cents; same company advanced Thrall (Tex.) Corsicana heavy and light crudes 5 cents, and Mexia 10 cents. The Texas Co. posted flat price of $1.10 for Healdton (Tex.) crude and advanced Currie crudes 10 cents; same company met Magnolia price for Mexia crude. Ohio Oil Co. and Midwest Refining Co. advanced Wyoming and Montana crudes 10 cents. Standard Oil Co. of Louisiana advanced all north Louisiana and Arkansas fields 10 cents.

Feb. 19.—Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Waterloo, Wooster and Plymouth crudes 10 cents.

March 8.—Standard Oil Co. of Louisiana posted five schedules based on gravity for Smackover (Ark.) crude. Maximum and minimum prices remain the same.

March 15.—Major purchasing companies advanced Gulf Cost crudes 25 cents.

March 28.—The Standard Oil Co. of Louisiana reduced Smackover crude (Ark.) of below 22 gravity 10 cents.

April 5.—The Texas Co. reduced Mexia and Currie (Texas) crudes 20 cents.

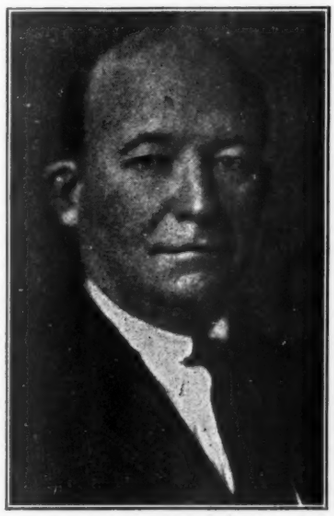
April 6.—Magnolia Petroleum Co. reduced Mexia crude 20 cents, meeting The Texas Co. price.

April 10.—Standard Oil Co. of Cali-

MOST UNIVERSAL OPTIMISM SINCE WAR DECLARES W. H. GRAY AFTER STORM

By W. H. Gray

President National Association of Independent Oil Producers



W. H. Gray

There are so many optimists that I know you will have hardly space enough for them to express themselves. You know in real optimistic times there are plenty of them, but it takes a deal of courage to be optimistic when you can see the storm tearing down the house over your head. As the old saying goes: "The man worth while is the man who can smile when everything goes dead wrong."

I somewhat depleted my store of optimism last year when everything was going to pieces, and I am satisfied to be quietly left alone at this period when pessimism has disappeared.

Even the buyers of crude oil can no longer conceal their optimism, and this period is the most universal one that we have seen since immediately after the war.

fornia reduced California crudes from 1 to 41 cents depending on gravity.

April 11.—Seep Purchasing Agency reduced Bradford, Allegany and all Pennsylvania crudes 25 cents, Corning 15 cents, Cabell and Somerset crudes 35 cents.

April 11.—Seep Purchasing Agency reduced Bradford, Allegany and all Pennsylvania crudes 25 cents, Corning 15 cents, Cabell and Somerset crudes 35 cents.

April 12.—The Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Waterloo and Plymouth crudes 10 cents. Imperial Oli Co., Ltd., reduced Canadian crudes 10 cents. Ohio Oil Co. reduced Sunburst, Mont., crude 10 cents.

April 13.—Standard Oil Co. of Louisiana reduced Smackover crude 10 cents.

April 20.—Standard Oil Co. of Louisiana reduced Bellevue crude 20 cents.

April 23.—Prairie Oil & Gas Co. reduced all grades of Oklahoma, Kansas and North Texas crudes 10 cents. Magnolia Petroleum Co. reduced all grades in same area 10 cents and reduced Thrall, Corsicana heavy and Corsicana light (Texas) crudes 10 cents. The Texas Co. reduced Currie and Mexia crudes 10 cents. All changes met by major purchasing companies in the area affected.

April 24.—Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Plymouth and Waterloo crudes 10 cents and Wooster crude 25 cents. Midwest Refining Co. and the Ohio Oil Co. reduced all Wyoming-Montana crudes 10 cents with the exception of Mule Creek, which was reduced 25 cents and Sunburst, which was reduced 30 cents. Standard Oil Co. of Louisiana reduced all grades of north Louisiana and Arkansas crudes 10 cents. The Texas Co. posted flat price of $1 for all Healdton (Okla.) crude it runs. Imperial Oil, Ltd., reduced Canadian crudes 10 cents.

May 2.—Prairie Oil & Gas Co. reduced Oklahoma, Kansas and North Texas crudes 10 cents. Magnolia Petroleum Co. reduced grades below 28° and 28° to 30.9° 5 cents, 31° to 32.9° 10 cents and met Prairie prices on other grades, as did other major purchasing companies. Magnolia Petroleum Co. also reduced Mexia and Thrall (Texas) crudes 10 cents and Corsicana light and heavy crudes 5 cents. The Texas Co. met Magnolia price for Mexia crude and reduced Currie (Texas) crude 10 cents.

May 3.—Standard Oil Co. of Louisiana reduced all grades of north Louisiana and Arkansas crudes 10 cents and changed Smackover schedule from five to four gravities. Ohio Oil Co. and the Midwest Refining Co. reduced all grades of Wyoming and Montana crudes 10 cents. Pennsylvania and Somerset crudes were reduced 25 cents and Corning 15 cents.

May 4.—Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 10 cents.

May 5.—Prairie Oil & Gas Co. reduced all grades of Oklahoma, North Texas and Kansas crudes 10 cents. Magnolia Petroleum Co. met prices in the same territory and reduced grades below 28° and 28° to 30.9° 5 cents, and 31° to 32.9° 10 cents. Magnolia Petroleum Co. also reduced Thrall and Mexia (Tex.) crude 10 cents and Corsicana light and heavy crudes 5 cents. The Texas Co. reduced Currie (Tex.) crude 10 cents. All changes met by other major purchasing companies.

May 7.—Ohio Oil Co. and the Midwest Refining Co. reduced all grades of Wyoming and Montana crudes 10 cents. Standard Oil Co. of Louisiana reduced all grades of north Louisiana and Arkansas crudes 10 cents with exception of Smackover below 24° and Bellevue, which were unchanged.

May 12.—Prairie Oil & Gas Co. reduced Oklahoma, Kansas and North Texas crudes 10 cents. Magnolia Petroleum Co. reduced 31° to 32.9° gravity and Thrall (Tex.) crudes 10 cents and Corsicana light crude 5 cents and met prices of Prairie in other fields. The Texas Co. reduced Mexia and Currie (Tex.) crudes 10 cents. All changes met by major purchasing companies. Humble Oil & Refining Co. reduced Currie (Tex.) crude 20 cents.

May 14.—Seep Purchasing Agency reduced Allegany, Bradford and Cabell crudes 25 cents, Somerset light and medium 20 cents, Corning 15 cents and Ragland crude 10 cents. Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Waterloo, Plymouth and Wooster crudes 10 cents. Imperial Oil, Ltd., reduced Canadian crudes 10 cents. Ohio Oil Co. and the Midwest Refining Co. reduced Wyoming and Montana crudes 10 cents with the exception of Sunburst, Mont., which was unchanged. The Texas Co. reduced Currie (Tex.) crude 10 cents meeting Humble Oil & Refining Co. price. Standard Oil Co. of Louisiana reduced Arkansas and north Louisiana crudes 10 cents.

June 6.—The posted price of Sunburst crude was reduced 10 cents a barrel, making the price now 70 cents.

June 18.—Seep Purchasing Agency reduced Pennsylvania crude, including Bradford-Allegany crude and Somerset light, 25 cents; Corning, 15 cents; Cabell and Somerset medium, 20 cents and Ragland, 10 cents.

June 19.—Ohio Oil Co. reduced Wooster crude 15 cents.

June 23.—Magnolia Petroleum Co. reduced Corsicana light (Tex.) crude 25 cents, Corsicana heavy, 5 cents, and Mexia (Tex.) crude 10 cents. The Texas Co. met Magnolia Petroleum Co.'s price in Mexia Field and reduced Currie (Tex.) 10 cents.

June 26.—Prairie Oil & Gas Co. and several other major purchasing companies start purchasing Oklahoma, North Texas and Kansas crudes on prorating basis. Details of purchase schedules explained elsewhere in this issue.

June 27.—Humble Oil & Refining Co. announced Grades A and B for Hull and Goose Creek crudes. Grade A price remained unchanged with $1.50 posted for Grade B.

June 28.—Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Waterloo and Plymouth crudes 10 cents. Imperial Oil, Ltd., reduced Petrolia and Oil Springs, Canada, crude 10 cents. The Texas Co. reduced Mexia (Tex.) crude 25 cents and Currie (Tex.) crude of 41 gravity and above 35 cents.

June 29.—Magnolia Petroleum Co. reduced Corsicana light 10 cents and Corsicana heavy 5 cents and met The Texas Co. prices in Mexia. Humble Oil & Refining posted price of $1.00 for Powell (Tex.) crude.

July 3.—Humble Oil & Refining Co. reduced Gulf Coast crudes 25 cents. Same company reduced Mexia crude 25 cents and Currie crude 35 cents. Changes met by major purchasing companies.

July 5.—Magnolia Petroleum Co. reduced Corsicana light (Tex.) crude 15 cents. This also covers Magnolia quotation for Powell Field.

July 9.—The Texas Co. reduced Gulf Cost crudes 25 cents, meeting prices of other companies but did not grade crudes as other companies had done.

July 10.—Seep Purchasing Agency reduced all grades of Pennsylvania crude 25 cents, Corning 10 cents, Cabell 21 cents, Somerset medium 15 cents, Somerset light 20 cents and Ragland 15 cents.

July 17.—Ohio Oil Co. reduced Wooster crude 10 cents.

July 18.—The Texas Co. in Oklahoma announced prorating plan whereby company takes 70 per cent of its former purchases.

July 19.—Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Plymouth and Waterloo crudes 20 cents and Wooster crude 10 cents.

July 20.—Magnolia Petroleum Co. reduced Oklahoma, Kansas and North Texas crudes below 28° gravity and 28° to 30.9° gravity 20 cents and Corsicana heavy crude 15 cents.

July 26.—Major purchasing companies reduced Grades "A" and "B" Gulf Coast crudes 25 cents and reduced Blue Ridge and Pierce Junction "B" to 90 cents.

July 31.—Purchasing companies reduced Rock Creek, Wyo., crude 10 cents.

August 1.—The current prices offered by Standard Oil Co. of California for crude oil at the well in the San Joaquin Valley fields will be the same as the current prices offered in the Los Angeles and Orange County Fields of southern California. This constitutes a reduction in the prices offered in the San Joaquin Valley fields. The price of crude oil from 14 degrees to and including 19.9 gravity remains unchanged at 60 cents. The reductions range from 1 cent per bbl. on 20 degrees to and including 20.9 gravity, to 41 cents per bbl. for crude oil of 35 degrees gravity and above. The prices in the Los Angeles and Orange County Fields remain unchanged.

August 1.—Magnolia Petroleum Co. advanced Corsicana light (Tex.) crude 15 cents, meeting price of other major purchasing companies.

August 3.—The Standard Oil Co. of Louisiana discontinued the Mid-Continent grades in purchasing crude and returned to former practice showing fewer grades the same as were in effect up to December 5, 1922.

August 13.—The Magnolia Petroleum Co. made proration effective in the Mid-Continent by announcing that effective this date it would limit its purchases in Texas and Oklahoma to 50 per cent of the production of the wells to which it was connected. The remaining 50 per cent is to be run into the company's common storage. All crude over 28 degrees gravity is affected.

August 20.—The Humble Oil & Refining Co. and Gulf Production Co. reduced Grade "A" Gulf Coast crude 25 cents, making the quotation $1.00. Grade "B" remained unchanged from 90c to $1.00. Other purchasing companies met the reduction.

September 1.—The Magnolia Petroleum Co. reduced Oklahoma, Kansas and Texas crudes of 28° to 30.9° gravity 10 cents; all grades from 30.9° to 40.9° 20 cents, and dropped the schedule of 41° and above. Same company reduced Thrall (Tex.) crude to $1. Change met by the Humble Oil & Refining Co. in competitive territory. Empire Pipe Line Co. met Magnolia schedule in Healdton Field only.

September 4.—The Texas Co. met the prices of the Magnolia in Oklahoma and Texas.

September 10.—The Standard Oil Co. of Louisiana reduced north Louisiana and Arkansas crudes 20 cents with the exception of Smackover light grades, which were reduced 10 cents; Smackover heavy, no change, and Bellevue, which was reduced 10 cents.

September 11.—The Texas Co. met Standard Oil Co. of Louisiana prices in north Louisiana and Arkansas fields.

September 12.—Gypsy Oil Co. reduced Kansas and Oklahoma crude 20 cents. Gulf Pipe Line Co. reduced North Texas crude 20 cents. These two companies base their prices on the same gravity schedules as the Prairie Oil & Gas Co.

September 19.—Prairie Oil & Gas Co. abandoned its schedule of prices for Oklahoma, Kansas and North Texas crudes and posted following prices: Below 33° gravity, 90 cents; 33° to 39.9° gravity.

(Continued on Page 196)

Tables Compiled by C. O. Willson

CALIFORNIA

	Jan. 1	Jan. 6	Apr. 10	Aug. 1	Oct. 9
14° to 19.9°	60	...	...	*...	...
20° to 20.9°	63	62	61	...	...
21° to 21.9°	67	65	62	...	...
22° to 22.9°	73	70	65	...	63
23° to 23.9°	80	75	68	...	68
24° to 24.9°	88	80	71	...	68
25° to 25.9°	96	85	74	...	68
26° to 26.9°	105	90	77	...	67
27° to 27.9°	115	95	80	...	68
28° to 28.9°	125	100	83	...	69
29° to 29.9°	135	105	86	...	70
30° to 30.9°	145	111	89	...	71
31° to 31.9°	155	117	92	...	72
32° to 32.9°	165	124	95	...	73
33° to 33.9°	175	131	98	...	74
34° to 34.9°	185	138	101	...	75
35° and above	195	145	104	...	75

*Note: On August 1 crude prices in the San Joaquin Valley were reduced to the same price scale as posted for the Los Angeles and Orange County fields of southern California. The changes made on April 10 did not apply to the San Joaquin fields and the prices in effect on January 6 in all California continued in the San Joaquin Valley fields until August 1.

GULF COAST

	Jan. 1	Feb. 8	Mar. 15	July 3
Sour Lake, Humble, Goose Creek, Vinton, West Columbia, Orange, Jennings, Spindletop, Pierce Junction "A," Hull, Blue Ridge "A"	$1.25	$1.50	$1.75	$1.50
Pierce Junction "B," Blue Ridge "B"	.80	1.05	1.30	1.05
Goose Creek "B," Hull "B"	...	....	....	1.25

	July 26	Aug. 20	Oct. 17	Nov. 2	Dec. 27
Gulf Pipe Line Co., Goose Creek, Hull, Sour Lake, Batson, Saratoga, Spindletop, Orange, Vinton, Edgerly, Jennings	$1.25	$1.00	$0.75	$1.00	$1.25
Grade "B," Pierce Junction, Blue Ridge	.90	.....	.65	.90	...
The Sun Pipe Line Co., Grade "A," Humble, Hull, Goose Creek, Orange, Spindletop, Saratoga, Batson, Dayton, Sour Lake	1.25	1.00	....	....	1.25
Grades "B," Blue Ridge, Pierce Junction	1.00	....	....	....	...
Humble Pipe Line Co., Goose Creek, Hull, West Columbia, Orange	1.25	1.00	....	....	1.25
Grade "B" Pierce Junction	1.00	....	....	....	...
Texas Pipe Line Co., Humble, West Columbia, Orange, Sour Lake, Saratoga, Batson, Vinton, Jennings, Markham	1.25	1.00	....	....	1.25
Sinclair Pipe Line Co., West Columbia, Damon Mound	1.25	1.00	....	....	1.25

WYOMING AND MONTANA

	January 1	January 15	January 18	January 29	February 2	February 3	February 10	February 17	Mar. 21	April 12	April 24	May 3	May 7	May 14	June 6	July 31	Sept. 21	Oct. 20	Nov. 9	Nov. 11
Rock Creek	1.15	1.25	1.35	1.45	...	1.55	1.65	1.75	...	...	1.65	1.55	1.45	1.35	...	1.25	.90	...	.60	...
*Big Muddy	1.05	1.15	1.25	1.35	...	1.45	1.55	1.65	...	...	1.55	1.45	1.35	1.25	...	...	.75	...	.45	...
Mule Creek	.90	1.00	1.10	1.20	...	1.30	1.40	1.50	...	...	1.25	1.15	1.05	.95	...	...	.75	...	.45	...
†Grass Creek	1.50	1.60	1.70	1.80	...	1.90	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	...	.95	...
Elk Basin	1.50	1.60	1.70	1.80	...	1.90	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	...	.95	...
Lance Creek	1.50	1.60	1.70	1.80	...	1.90	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.20	...	.80	...
Sunburst	...	...	...	...	...	...	...	...	1.40	1.30	1.00	.90	.80	...	.70	...	...	...	...	...
Below 28°	.70	.80	.90	1.00	...	1.10	1.20	1.30	...	...	...	...	...	...	...	...	...	...	...	...
28° to 33.9°	.70	.90	1.00	1.10	...	1.20	1.30	1.40	...	...	...	...	...	...	...	...	...	...	...	...
34° and above	.70	1.00	1.10	1.20	...	1.30	1.40	1.50	...	...	...	...	...	...	...	...	...	...	...	...
Osage	1.50	1.60	1.70	1.80	1.90	...	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	1.20	.80	...
Cat Creek	1.50	1.60	1.70	1.80	1.90	...	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	...	.95	...
Salt Creek	1.05	1.15	1.25	1.35	1.45	...	1.55	1.65	...	...	1.55	1.45	1.35	1.25	...	...	.90	...	.60	...
Greybull-Torchlight	1.50	1.60	1.70	1.80	1.90	...	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	...	.95	...
Hamilton Dome	1.05	1.15	1.25	1.35	1.45	...	1.55	1.65	...	...	1.55	1.45	1.35	1.25	...	...	.82½	...	.55½	...

*August 10, 95c. †Grass Creek (black) was priced 90 cents on June 28, and that price continued for the remainder of the year. Lander crude for the entire year.

OKLAHOMA, KANSAS AND NORTH AND CENTRAL TEXAS

In these fields especially the latter part of the year there was considerable variance in price as posted by the major purchasing companies. In the following tables the posted price changes of the Prairie Oil and Gas Co. are given together with those of the Magnolia Petroleum Co. In North and Central Texas area the prices of The Texas Co. and Humble Oil and Refining Co. are given as effective beginning October 8. To obtain other variations from the posted price changes of the Prairie Oil and Gas Co. attention is called to the accompanying chronological changes.

Prairie Oil and Gas Co.:

	January				February			April	May				Sept.	Nov.
	1	13	17	27	2	10	17	23	2	5	12		19	8
Below 28°	$0.90	$1.00	$1.10	$1.20	$1.30	$1.40	$1.50	$1.40	$1.30	$1.20	$1.10	Below 33°	$0.90	$0.75
28° to 29.9°	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.50	1.40	1.30	1.20	33° to 39.9°	1.30	1.00
30° to 32.9°	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.60	1.50	1.40	1.30	40° and above	1.75	1.25
33° to 34.9°	1.25	1.35	1.45	1.55	1.65	1.75	1.85	1.75	1.65	1.55	1.45			
35° to 36.9°	1.40	1.50	1.60	1.70	1.80	1.90	2.00	1.90	1.80	1.70	1.60			
37° to 38.9°	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.10	2.00	1.90	1.80			
39° and above	1.80	....	....	....	....	....	....	....	....	....	....			
33° and above	....	1.90	2.00	2.10	2.20	2.30	2.40	2.30	2.20	2.10	2.00			
39° to 40.9°	....	2.10	2.20	2.30	2.40	2.50	2.60	2.50	2.40	2.30	2.20			
41° and above	....	....	....	....	....	....	....	....	....	....	....			

	January				February		April	May			July	Sept.		Oct.	Nov.	Dec.	Dec.
	1	15	18	27	3	12	17	23	2	5	12	20	1	19	30	8	15	28
Magnolia Petroleum Co.:																		
Below 28°	$ .65	....	$ .70	....	....	$ .85	$ .90	$ .80	$ .75	$ .70	....	$ .60	....	....	....	$ .40	....	$ .50
28° to 30.9°	.75	....	.85	.90	....	1.30	1.25	1.15	1.10	1.05	....	.85	.75	.70	....	.60	....	.75
31° to 32.9°	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.60	1.50	1.40	1.30	....	1.10	.90	....	.75	....	.90
33° and above	Met Prairie prices on above dates.																	
33° to 34.9°	....	....	....	....	....	....	....	....	....	....	....	....	1.25	Same as Prairie.				
35° to 36.9°	....	....	....	....	....	....	....	....	....	....	....	....	1.40	Same as Prairie.				
37° to 38.9°	....	....	....	....	....	....	....	....	....	....	....	....	1.60	Same as Prairie.				
39° and above	....	....	....	....	....	....	....	....	....	....	....	....	1.80	Same as Prairie.				
33° to 39.9°	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.10	1.00	....	....
40° and above	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.25	....	....	....
North and Central Texas only:																		
33° to 35.9°	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.00	1.15
36° to 38.9°	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.15	1.30
39° and above	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.30	1.40

Note: The changes on December 28 applied to all fields.

	January					February				April		May			June			July		Aug.	Sept.	Oct.	Nov.		Dec.	
	1	15	18	23	25	1	2	10	13	17	5	13	2	5	12	14	23	28	29	3	5	20	1	1	30	8	19	27	28
Thrall	$1.50	$1.60	$1.70	....	....	....	....	....	$2.85	$1.90	....	$1.80	$1.70	$1.60	$1.50	....	....	....	....	....	....	....	....	$1.00	....	....	....	....	....
Corsicana‡	1.00	1.10	1.20	....	....	1.20	....	1.45	1.50	....	1.40	1.35	1.30	1.25	....	$1.00	....	$ .90	....	*.75	....	*1.00	....	*.75	....	*1.00	$1.25	....	....
Corsicana†	.65	....	.70	....	....	....	....	.85	.90	....	.80	.75	.70	....	....	.65	....	.60	....	....	....	.45	....	....	.40	....	....	....	.50
Mexia	1.55	....	....	$1.80	....	$1.90	2.00	2.10	....	2.20	2.60	1.90	1.80	1.70	1.60	....	1.50	1.25	....	1.00	....	....	....	....	....	....	1.25	....	....
Currie§	1.80	....	....	2.20	....	2.30	2.40	2.50	....	2.60	2.40	2.30	2.20	2.10	2.00	1.90	1.70	1.35	....	1.00	....	....	....	....	....	....	1.25	....	....
Powell	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.00	....	....	....	....	....	....	*.75	....	*1.00	....	....

	Jan.		February			April			May		June		July	Dec.
	1	23	1	2	10	17	5	23	2	5	12	22	28	3	27
Humble Oil & Refining Co.:															
Currie	$1.80	$2.20	$2.30	$2.40	$2.50	$2.60	$2.40	$2.30	$2.20	$2.10	$1.90	$1.70	$1.35	$1.00	$1.35
Mexia	1.55	1.80	1.90	2.00	2.10	2.20	2.00	1.90	1.80	1.70	1.60	1.50	1.25	1.00	1.25

*These prices were posted by the Magnolia Petroleum Co., but were not met by all major producing companies. Detailed information regarding these changes can be obtained from the table of chronological changes. ‡Light. †Heavy. §Texas Co.

*North and Central Texas—

	Oct.	Nov.		Dec.	Dec.
	9	9		13	27
The Texas Co.:					
Below 33°	$ .90	$ .75		$....	$ .90
33° to 35.9°	1.10	1.00	33° to 35.9°	1.00	1.15
36° and above	1.25	....	36° to 38.9°	1.15	1.30
			39° and above	1.30	1.40

	October		Dec.
	8	19	27
Humble Oil & Refining Co.:			
Below 30°	.90	.80	.90
30° to 32.9°	1.10	.90	1.00
33° to 35.9°	1.20	1.00	1.15
36° to 38.9°	1.35	1.15	1.30
39° and above	1.50	1.30	1.40

*Previous to October there were other differences between the posted prices of The Texas Co., Humble Oil & Refining Co., Magnolia Petroleum Co. and Prairie Oil & Gas Co., as shown by the accompanying table of chronological changes. The change by The Texas Co. given above, effective December 27, applied to Oklahoma and Kansas, as well as North and Central Texas.

EASTERN AND MIDDLE WESTERN STATES

	January							February				April		May		June		July		Sept.	November		Dec.
	1	15	16	18	29	30	31	5	8	13	19	12	24	4	14	19	28	17	19	20	8	9	21
Pennsylvania	$3.25	....	$3.35	$3.45	$3.55	....	....	See below		....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cabell	2.11	....	2.21	2.31	2.41	....	....	See below		....	....	....	....	....	....	....	....	....	....	....	....	....	....
Corning	1.75	....	2.00	....	....	2.15	....	See below		....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lima	1.98	2.08	....	2.18	....	....	2.28	2.38	....	2.48	$2.58	$2.48	$2.38	$2.28	$2.18	....	$2.08	....	$1.88	$1.68	....	$1.43	$1.53
Wooster	1.90	2.00	....	2.10	....	....	2.20	2.30	....	2.40	2.50	....	2.25	2.15	2.05	1.90	....	1.80	1.70	1.50	....	1.35	1.40
Ragland	1.00	....	See below		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Illinois	1.77	1.87	....	1.97	....	....	2.07	2.17	....	2.27	2.37	2.27	2.17	2.07	1.97	....	1.87	....	1.67	1.47	1.22	....	1.32
Indiana	1.78	1.88	....	1.98	....	....	2.08	2.18	....	2.28	2.38	2.28	2.18	2.08	1.98	....	1.88	....	1.68	1.48	....	1.23	1.32
Princeton	1.77	1.87	....	1.97	....	....	2.07	2.17	....	2.27	2.37	2.27	2.17	2.07	1.97	....	1.87	....	1.67	1.47	1.22	....	1.32
Plymouth	1.15	1.25	....	1.35	....	....	1.45	1.55	....	1.65	1.75	1.65	1.55	1.45	1.35	....	1.25	....	1.05	.85	....	.60	.70
Waterloo	1.25	1.35	....	1.45	....	....	1.55	1.65	....	1.75	1.85	1.75	1.65	1.55	1.45	....	1.35	....	1.15	.95	....	.70	.80
*Somerset light	2.15	....	2.25	2.35	2.45	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
*Somerset medium	1.90	....	2.00	2.10	2.20	....	....	See below		....	....	....	....	....	....	....	....	....	....	....	....	....	....
†Petrolia, Canada	2.38	2.48	....	2.58	....	....	2.68	2.78	....	2.88	2.98	2.88	2.78	2.68	2.58	....	2.48	....	2.28	2.08	....	1.83	1.93
†Oil Springs, Canada	2.45	2.55	....	2.65	....	....	2.75	2.85	....	2.95	3.05	2.95	2.85	2.75	2.65	....	2.55	....	2.35	2.15	....	1.90	2.00

	February			April	May		June	July	Sept.	November		December			
	1	3	8	15	11	3	14	18	10	20	13	14	21	22	26	28	31
Following prices were announced on February 1, 1923:																	
Penna Grade Oil in New York Transit Lines	$3.80	$3.90	$4.00	$4.25	$4.00	$3.75	$3.50	$3.25	$3.00	$2.75	$2.60	....	$2.85	....	....	$3.10	....	....	$3.25
Bradford District Oil in National Transit Lines	3.80	3.90	4.00	4.25	4.00	3.75	3.50	3.25	3.00	2.75	2.60	....	2.85	....	....	3.10	....	....	3.25
Penna Grade Oil in National Transit Lines	3.65	....	3.75	4.00	3.75	3.50	3.25	3.00	2.75	2.50	2.35	....	2.60	....	....	2.85	....	....	3.00
Penna Grade Oil in Buckeye Pipe Lines	3.65	....	3.75	4.00	3.75	3.50	3.25	3.00	2.75	2.50	2.35	....	2.60	....	....	2.85	....	....	3.00
Corning Grade Oil in Buckeye Pipe Line Lines	....	....	....	2.20	2.15	2.00	1.85	1.70	1.60	1.45	....	1.25	....	1.40	....	....	....	....	....
Cabell Grade Oil in Eureka Pipe Line Lines	2.51	....	2.61	2.76	2.41	2.16	1.91	1.71	1.50	1.35	1.20	....	....	1.35	....	....	1.45	....	....
*Somerset Medium Oil in Cumberland Pipe Line Lines	2.30	....	2.40	2.55	2.20	1.95	1.75	1.55	1.40	1.25	1.15	....	....	....	....	....	1.40	....	....
*Somerset Light Oil in Cumberland Pipe Line Lines	2.55	....	2.65	2.80	2.45	2.20	2.00	1.75	1.55	1.40	1.30	....	....	1.45	....	....	1.55	....	....
Ragland Grade Oil in Cumberland Pipe Line Lines	....	....	....	1.10	....	....	1.00	.90	.75	....	....	....	....	....	....	....	.85	....	....
Penna Grade Oil in Southwest Pa. Pipe Lines	3.65	....	3.75	4.00	3.75	3.50	3.25	3.00	2.75	2.50	2.35	....	2.60	....	....	2.85	....	....	....
Penna Grade Oil in Eureka Pipe Lines	3.65	....	3.75	4.00	3.75	3.50	3.25	3.00	2.75	2.50	2.35	....	2.60	....	....	2.85	....	....	....

*Somerset oil commands 6 cents over the above posted price. †Plus Government bounty of 52½c.

NORTHERN LOUISIANA AND ARKANSAS

As Posted by Standard Oil Co. of Louisiana

	January					February			March		April		May				Aug.	Sept.	Nov.	Dec.
	1	3	18	26	30	12	17	18	28	13	20	24	3	7	14		3	10	15	29
Homer, Caddo, Haynesville and El Dorado Fields—																Caddo—				
Below 30°	.75	....	.85	.95	1.05	1.15	1.25	1.35	....	....	....	....	1.25	1.15	1.05	.95	Below 32°	.95	.75	....	.90
30° to 32.9°	1.10	....	1.20	1.30	1.40	1.50	1.60	1.70	....	....	....	....	1.60	1.50	1.40	1.30	32° to 34.9°	1.30	1.10	.90	1.05
33° to 34.9°	1.25	....	1.35	1.45	1.55	1.65	1.75	1.85	....	....	....	....	1.75	1.65	1.55	1.45	35° to 37.9°	1.35	1.15	1.00	1.15
35° to 36.9°	1.40	....	1.50	1.60	1.70	1.80	1.90	2.00	....	....	....	....	1.90	1.80	1.70	1.60	38° and above	1.45	1.25	1.10	1.25
37° to 38.9°	1.60	....	1.70	1.80	1.90	2.00	2.10	2.20	....	....	....	....	2.10	2.00	1.90	1.80	Homer—				
39° and above	1.80	....	1.90	2.00	2.10	2.20	2.30	2.40	....	....	....	....	2.30	2.20	2.10	2.00	Below 31°	.95	.75	....	.90
Bull Bayou																	31° to 32.9°	1.30	1.10	.90	1.05
33° to 34.9°	1.25	....	1.35	1.45	1.55	1.65	1.75	1.85	....	....	....	....	1.75	1.65	1.55	1.45	33° to 34.9°	1.35	1.15	1.00	1.15
35° to 37.9°	1.30	....	1.40	1.50	1.60	1.70	1.80	1.90	....	....	....	....	1.80	1.70	1.60	1.50	35° and above	1.45	1.25	1.10	1.25
38° and above	1.40	....	1.50	1.60	1.70	1.80	1.90	2.00	....	....	....	....	1.90	1.80	1.70	1.60	Haynesville—				
Smackover	.30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	Below 33°	1.30	1.00	.90	1.05
Smackover—																	33° above	1.30	1.10	1.00	1.15
Below 26—	....	.30	.40	.50	.60	.70	.80	.90	See Below	....	....	....	....	....	....	....	El Dorado—				
26° and above	....	.75	.85	.95	1.05	1.15	1.25	1.35	See Below	....	....	....	....	....	....	....	Below 33°	1.30	1.10	1.00	1.15
Crichton	1.25	....	1.35	1.45	1.55	1.65	1.75	1.85	....	....	....	....	1.75	1.65	1.55	1.45	33° and above	1.45	1.25	1.10	1.25
De Soto	1.60	....	1.70	1.80	1.90	2.00	2.10	2.20	....	....	....	....	2.10	2.00	1.90	1.80	Bull Bayou—				
Bellevue	.75	....	.85	.95	1.05	1.15	1.25	1.35	....	....	....	1.15	1.05	.95	....	.85	32° to 34.9°	1.20	1.00	.75	.90
Smackover—																	35° to 37.9°	1.25	1.05	.80	1.05
Below 23°	....	....	....	....	....	....	....	.90	.80	.70	....	.60	See Below		....		38° and above	1.35	1.15	1.05	1.20
23° to 32.9°	....	....	....	....	....	....	....	1.00	....	.80	....	.80	See Below		....		Smackover—				
34° to 34.9°	....	....	....	....	....	....	....	1.10	....	1.00	....	.90	.80	.70	.60		Below 24°	.40	....	....	.55
35° to 35.9°	....	....	....	....	....	....	....	1.20	....	1.10	....	1.00	.90	.80	.70		24 to 24.9°	.60	.50	....	.65
36° and above	....	....	....	....	....	....	....	1.35	....	1.25	....	1.15	1.05	.95	.85		25° to 25.9°	.70	.60	....	.75
Below 24°	....	....	....	....	....	....	....	....	....	....	....	....	.50	....	.40		26° and above	.85	.75	....	.90
																	De Soto	1.45	1.25	1.10	1.25
																	Crichton	1.10	.70	....	1.05
																	Bellevue	.85	.75	....	.90

MEXICAN CRUDE

Prices on Mexican crude are not posted but are based on contracts. The dates of changes as given in the table below refer to the first issue of The Oil and Gas Journal in which they appeared.

	Jan.	Feb.		April	June	July	August			Sept.	Nov.	Dec.
	1	15	22	5	14	5	13	23	30	13	1	20
*Tuxpam (Mexican ports)	1.85	....	....	....	1.95	....	....	....	....	1.00	.80	....
†Panuco (Mexican ports)	.90	1.00	....	....	.90	.75	....	....	.45	.65	.60	.65
Tuxpam (New York)	1.85	2.00	1.87	2.08	....	....	1.99	1.91	....	1.55	1.34	1.31
Panuco (New York)	1.30	1.60	1.43	1.64	1.54	1.39	1.30	1.17	1.00	.97	.92	1.06
*Plus tax of	.2033	.2598	....	....	.313	....	....	....	....	.3034	.2938	.2669
†Plus tax of	.1121	.1672	....	....	.1725	....	....	....	....	.1493	.1659	.1558

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GOODYEAR

SHIPMENTS OF REFINED AND CRUDE FROM GULF PORTS IN 1923 LARGEST

HOUSTON, Tex., Jan. 28.—The shipments by water of refined and crude from the Gulf Ports during the year 1923 were the largest in the history of the petroleum industry. A total of 116,845,440 bbls. were sent out in tankers, of which 75,218,134 bbls. was refinery products, including fuel oil, and 41,627,306 bbls. crude.

The ports from which cargoes were dispatched are Port Arthur, Beaumont, Sabine Pass, Neches Terminals, Smith's Bluff, all of which are on the Neches River and termed the Beaumont-Port Arthur district. Other Texas ports from which boats left are Texas City on Galveston Bay; Baytown, Sinco, Galena and Houston, all on the Houston ship channel. Those in South Louisiana include Baton Rouge, New Orleans and Westwego.

The big refineries of The Texas Co. and Gulf Refining Co. are located at Port Arthur. The Magnolia Petroleum Co.'s plant is at Beaumont. The Humphrey-Pure Oil Co.'s terminals are at Smith's Bluff. The Sun Oil Co. loads crude for Marcus Hook refinery at Sabine Pass, the Humble Oil & Refining Co. loads crude from the Orange Pool at Neches terminals and the Atlantic Oil Refining Co. loads crude at Port Arthur. The terminals of the Humble Oil & Refining Co. are at Texas City, as are those of the Vacuum Oil Co., Swiftsure Petroleum Co. and Marland Refining Co. The Humble Co.'s refinery is at Baytown, with additional ocean terminals. The refinery of the Sinclair Co. is at Sinco, that of the Galena-Signal Oil Co. at Galena, the Crown Oil & Refining Co. (White Oil Corp.) and Deepwater Refining Co. and the Houston Terminal Refining Co. are all on the ship channel. The Standard Oil Co. of Louisiana loads at its Baton Rouge refinery and also from storage at New Orleans. The Union Petroleum Co. loads at Westwego.

Crude shipments from the Gulf ports have been increasing since 1920, but reached the high grade mark to date in 1923. The Powell Field is responsible for the increase of crude. Each year more crude is sent down to the coast from the fields in Oklahoma, North Texas and North Louisiana through pipe lines and then shipped in tankers to the Atlantic seaboard refineries. It is claimed it can be handled cheaper than by the all-pipe line route to the East.

Exports

Export shipments fell off 4,337,218 bbls. in 1923, compared with 1922. The total refinery products sent abroad aggregated 18,459,219 bbls., compared with 21,162,601 bbls. in 1922 and crude declined 1,633,836 bbls. from the 1922 figures.

The largest shippers were The Texas Co., Gulf Refining Co., Magnolia Petroleum Co., Humble Oil & Refining Co., and the Standard Oil Co. of Louisiana. The total consignments by these companies aggregated 98,012,161 bbls. of the gross for the year. The Texas Co. loaded out 21,420,581 bbls. during the year, most of it being refined. The Gulf Refining Co. consigned 27,334,474 bbls., which, like The Texas Co., was mostly refined. The Magnolia Co. handled 11,384,640 bbls. over its docks. The Humble Oil & Refining Co. loaded a total of 22,052,775 bbls., the bulk of its consignments being crude. The Standard Oil Co. of Louisiana sent out 15,819,691 bbls., the bulk being refined.

Other shippers were the Atlantic Oil Producing Co., Pure Oil Co., Vacuum Oil Co.—all crude consignments. The Sinclair Co. mixed cargoes, Deepwater Refining Co., refined, Galena-Signal Oil Co., refined, White Oil Co., refined, Swiftsure Petroleum Co., crude, Sun Oil Co., crude, and Union Petroleum Co., refined.

Shipments by Months

The following table gives the shipments of refined and crude by months:

Month—	Refined	Crude	Total
January ..	6,904,400	3,627,132	10,531,532
February .	6,075,471	3,447,752	9,523,223
March	6,511,455	2,329,684	8,841,039
April	6,621,962	3,842,756	10,464,718
May	5,861,496	2,190,021	8,051,517
June	6,062,962	2,321,891	8,384,853
July	7,247,311	3,832,411	11,079,722
August ...	6,625,357	3,481,997	10,107,354
Sept.	6,076,018	4,042,488	10,118,506
October ..	5,825,954	4,013,764	9,839,718
November..	5,324,246	4,539,103	9,863,349
December .	6,081,502	3,958,407	10,039,909
Total '23.	75,218,134	41,627,306	116,845,440
Total '22.	73,266,650	36,286,373	109,542,023
Differ. ..	1,961,484	4,341,923	7,303,417
Exports			
January ..	1,510,322	.....	1,510,322
February .	1,613,194	64,383	1,677,577
March	1,945,674	.....	1,945,674
April	1,873,454	.....	1,873,454
May	1,356,659	.....	1,356,659
June	1,356,959	78,981	1,435,940
July	1,897,606	.....	1,897,606
August ...	1,866,641	51,758	1,918,399
Sept.	1,541,427	.....	1,541,427
October ..	1,446,259	.....	1,446,259
November.	886,926	375,481	1,262,407
December.	1,164,098	420,476	1,584,574
Total '23.	18,459,219	991,079	19,450,298
Total '22.	21,162,601	2,624,915	23,787,516
Differ. ..	2,703,382	1,633,836	4,337,218

GEOLOGIST TO TALK ON SAN JUAN CANYON

Dr. H. D. Miser of the United States Geological Survey lectured before the Tulsa Geological Society recently on the San Juan Canyon, just west of New Mexico, in Arizona, which he explored in 1921.

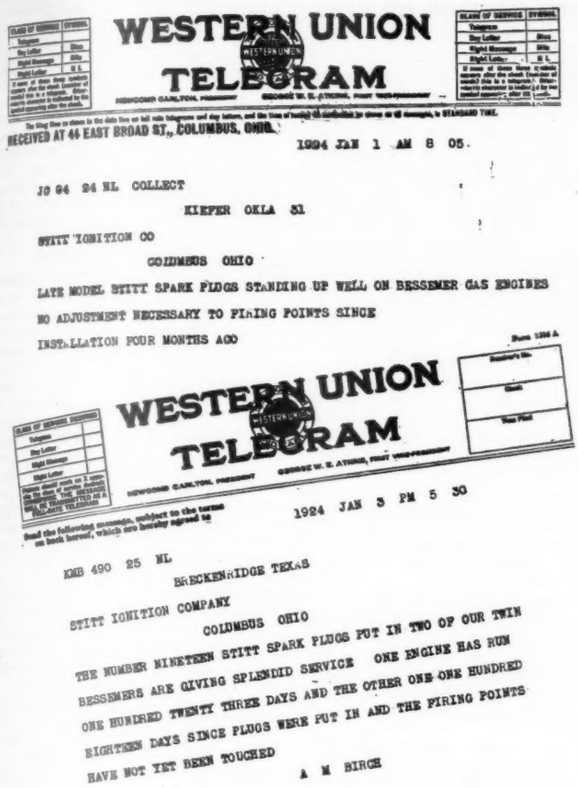
The canyon lies behind the famous Painted Desert, in northern Arizona and southern Utah, and extends from near Bluff, a small inland town in the southeastern part of Utah, westward across a barren arid waste of sand, rocks and lava to the northeastern end of the Grand Canyon of the Colorado. The country has never been properly surveyed and maps are only approximately correct, Doctor Miser said. The only inhabitants are a few Navajo and Pah-Ute Indians, and a few traders, who bring their supplies by pack train from the Santa Fe railroad, more than 100 miles south.

Doctor Miser said the expedition of 1923, conducted by the United States Geological Survey, entered the Grand Canyon at Lee's Ferry, where his survey ended, and carried the exploration through the Grand Canyon to Needles, Cal. This trip will be the subject of a lecture by Dr. Raymond C. Moore, State geologist of Kansas, who was the geologist of the party, at a public meeting in the Tulsa high school auditorium on February 2. Doctor Moore took a picture record of his trip. For a time last summer there was fear the party had been lost in the rapids, due to the finding, in the lower Colorado River, of overturned boats.

NEW TECHNICAL BOOKS

"Oil Well Drilling Methods," by Victor Zeigler, consulting geologist, published by John Wiley & Sons, Inc., New York, gives brief, accurate descriptions and explanations of methods and tools used in drilling oil wells. All operations are considered from the time the material is hauled on the ground but in a concise manner. The chapters on drilling difficulties will be found especially interesting.

"Measurement, Compression and Transmission of Natural Gas," by Louis C. Lichty, assistant professor of mechanical engineering, Unirersity of Oklahoma, published by John Wiley & Sons, Inc., New York, is a text book on a new subject for engineering schools, but written so as to be of practical service to the man in the field in the operation of the apparatus he uses. There are numerous examples making clear the application of the principles explained.



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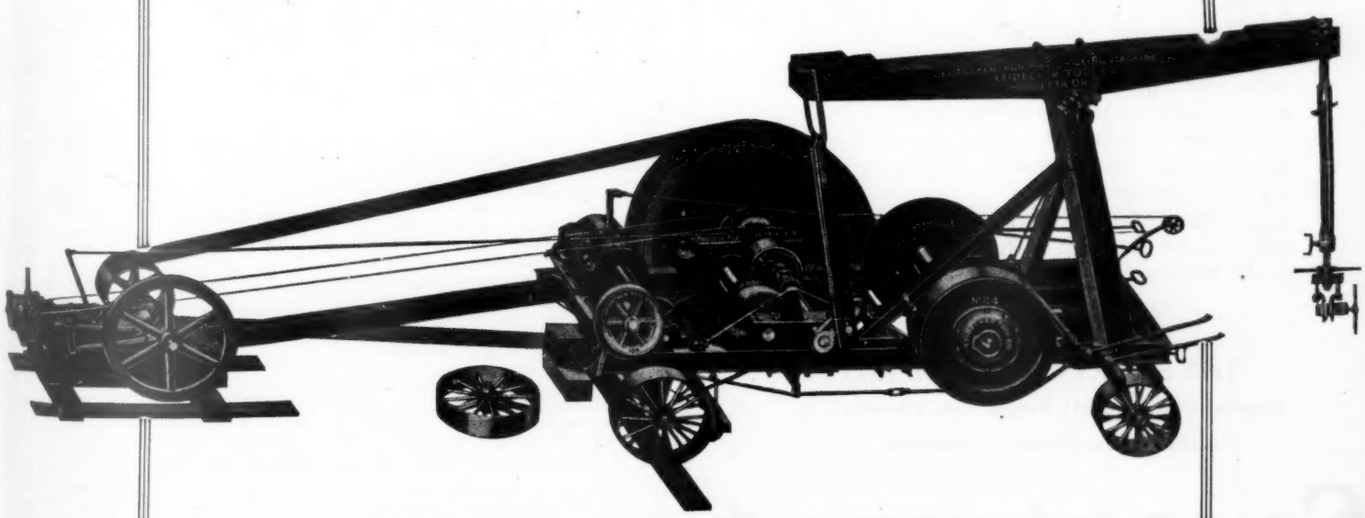

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OIL INDUSTRYS 1923 CONSUMPTION OF STEEL

(Continued from Page 52)

per cent of capacity in 1923, and thus they did a little better than the steel industry as a whole, which made an average of about 80 per cent. As a matter of fact, ever since the war it has been noticeable that the pipe mills have had a larger demand, relative to their capacity, than the other finishing departments of the steel industry have had, such as the shape mills, plate mills, bar mills, etc. In 1919, for instance, when demand for steel was growing from month to month, it was the pipe mills that first got up to capacity operations, and correspondingly in the late months of 1920 they were the last to slacken in production. While the capacity of the steel industry as a whole has increased by more than 50 per cent since 1913 the capacity of the pipe mills has barely increased 25 per cent. One large pipe mill, however, is being built by the United States Corp. This will be located at Gary, Ind., and will be operated by the Steel Corp.'s pipe subsidiary, the National Tube Co., whose headquarters are in Pittsburgh, Pa. The plant is expected to begin operations at part capacity in the late months of 1924.

Large Demand for Pipe

The pipe mills expect a large demand from the oil trade in future, year by year, and hope to be in position to meet it. Apart from new drilling they believe there will be much deepening of existing wells, in the Mid-Continent Field in particular.

For the deeper operations, rotary drilling is expected to come more and more into vogue, and for this work it is thought seamless tubing will come to be preferred to the welded material hitherto employed. The seamless tubing can be produced at only a moderate advance in cost over the welded and is much superior in quality on account of its smoothness and greater strength.

There were two advances in pipe mill production in 1923. The year opened with merchant pipe on a basing discount of 66 per cent, on the list of October 19, 1922. February 3, 1923, there was a general revision of prices, particularly a horizontal advance, the basing discount becoming 64 per cent. April 19, 1923, the basing discount advanced to 62 per cent. Both the advances were nominally $4 a net ton, but in the second advance some sizes and descriptions were advanced much more than $4. Prices were firm throughout the year entered the new year strongly held.

PROPOSED AMENDMENT AFFECTS PRODUCERS

(Continued from Page 52)

financially strong and some of whom might become insolvent after collecting the tax and before the tax paying period arrives. In which event the producer would lose the tax deducted from the purchase price by the purchaser and would also have to pay the tax to the State. In the case of many of these purchasers the producer has no means of knowing their insolvency, or if solvent, whether they will stay in the State a sufficient time to make the returns and pay the tax required by law. If they are insolvent or fail to return and pay the tax, the producer has to pay the tax. There are many purchasers of oil who live without the State. These purchasers would undertake to deduct the tax from the purchase price paid for oil and if they fail to make returns, whether solvent or insolvent, the producer would have to pax the tax and then go to a foreign jurisdiction in order to recover the tax deducted by such purchasers. Again, where oil was tendered to a pipe line or other carrier for transportation, what method would there be of ascertaining whether the tax on the oil had been paid? This would result in impeding the flow of oil in commerce and act to the disadvantage of the producer. Under the existing law the producer can protect himself against loss from the purchaser of oil by receiving cash payment and paying his own tax. Under the proposed amendment he could not so protect himself as to the tax because the purchaser, solvent or insolvent, would deduct the tax. Thus the producer would become, in effect, a surety for every purchaser to whom he would sell oil and would put the burden upon him which would so hamper the industry as must necessarily decrease the revenue of the State.

Interstate Shipments

A large part of the oil produced in Oklahoma is transported out of the State by common carrier shipments, to be paid for on delivery at point of destination. Much of this oil has been in tanks for months and the tax paid. Under the proposed law, how will the producer establish the fact of such payment? How will the purchaser know the tax has been paid? Not knowing, will not the purchaser be compelled to deduct the tax in order to protect himself? If so, will not the producer be compelled to pay double tax or be forced to recover the tax from the purchaser in a foreign jurisdiction? If producers and royalty owners are not now forced to pay the tax under the present law on the oil sold, it is because the reports of producers and purchasers are not checked in the Auditor's office and the delinquents compelled to comply with the law, or on account of the failure of both purchasers and producers to make the required reports. The proposed law does not eliminate either of these possibilities and therefore it adds complication and complexity to the existing system, increases the burdens on the producers, impedes the transaction of business, increases the possibility of loss by the State, and this without any resulting benefit to producer, purchaser or State. The interests of the producers and the interests of the State alike demand that the proposed law be not passed.

TEXAS LINES GATHER TEN MILLION BARRELS

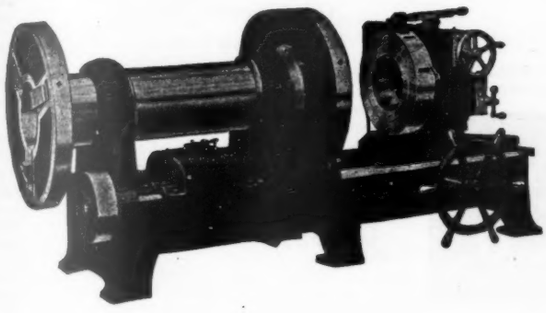
AUSTIN, Tex., Jan. 26.—Oil gathered by pipe lines in Texas during December totaled 10,009,081 bbls., according to the State Comptroller's report. The greatest quantity was gathered from the Navarro County Field, 2,263,163 bbls. Limestone Field was second with 1,905,901 bbls. and Wichita third with 1,728,909 bbls.

Gatherings from other fields were: Archer 17,671 bbls., Atascosa 10,961, Bexar 30,512, Brazoria 437,439, Brown 4,514, Caldwell 353,606, Clay 3,416, Coleman 432, Comanche 30,110, Eastland 460,769, Freestone 53,750, Fort Bend 26,480, Hardin 214,090, Harris 554,935, Jack 3,984, Jefferson 27,982, Liberty 531,663, Marion 65,431, Matagorda 1,024, Orange 352,102, Palo Pinto 22,469, Shackelford 101,659, Stephens 570,757, Young 229,043 and Williamson 2,055.

MEXICAN OIL TAX LOWER

NEW YORK, Jan. 28.—Mexican taxes on oil production for January are about 1½ cents a barrel lower on light crude and fuel oil than in December last year owing to the drop in the average basic price in New York harbor from $1.49 a barrel to $1.41½. Including the export levy, the total tax on light crude oil for January is about 25 cents a barrel, heavy crude 15 cents and fuel oil 22 cents. The January taxes in United States currency per barrel of crude and fuel oil and per gallon of gasoline and kerosene follow:

	Prod.	Export	Tot. tax
Crude oil, 20.38 B. and above.....	$0.16913	$0.07948	$0.24861
Crude oil, 15.65 B. or heavier ...	0.09905	0.04928	0.14833
Fuel oil, 17.21 B..	0.15282	0.0636	0.21642
Gasoline, crude ..	0.005199	0.00712	0.012319
Gasoline, refined.	0.0026	0.00356	0.00616
Kerosene, crude..	0.0045	0.00227	0.00677
Kerosene, refined	0.00225	0.001135	0.003385



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Edwardsville, Ill.

A Change In Name But Not In Policy

The
B. & C. Machine & Foundry Co.
Will be Known as
CUNNINGHAM CO.

The change in name was effective January 1st.

Cunningham Co. will operate as a Machine Shop and Foundry and will handle oil field supplies and specialties.

The same policy of Good Service, Workmanship and Quality will be carried out under the new name.

The officers of CUNNINGHAM CO. are as follows: W. P. Cunningham, President and General Manager; E. N. Wycoff, Vice President; J. T. McCullough, Secretary and Treasurer; Earl W. Miller, Sales Manager.

200

Cosden & Company

TULSA OKLAHOMA

Manufacturers and distillers of high grade Gasoline, Naphthas, Lubricating and Illuminating Oils.

Unexcelled Producing
Refining
Transporting Facilities

A

DEVIL'S STEEL HAND

Cleans Plugged Hole In 14 Hours

Other tools fished 8 days and failed

Devil's Steel Hand

P. W. Fusselman, of Claremore, Okla., was down 1,060 feet in a 6¼-inch hole when he lost the entire string of tools. Four slips from the combination socket were also lost in the hole. After fishing eight days without any success the hole was declared plugged.

Our Tulsa Rental branch offered to take the fishing job on a guarantee basis —to clean the hole or no pay. The offer was accepted and a 5 3/16" DEVIL'S STEEL HAND was placed on the job.

In 14 hours the hole was clean, slips and all!

Devil's Pitchfork

The expense incurred in the previous eight days' fishing, not including the cost of time and labor, would have more than paid the cost of either a DEVIL'S STEEL HAND or DEVIL'S PITCHFORK.

Think this over before you start on your next fishing job.

BROWN

WELDING & MACHINE CO.

Main Office and Factory: Breckenridge, Texas

Rental Branch: 310 E. 3rd St., Tulsa, Okla.

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WEATHER CHIEF FACTOR IN CHICAGO

Cold Snap Cuts Consumption, Halting Advances, While "Distress" Gasoline Appears on Market. Naphthas Scarce and Firm. Oil Burners Increase Kerosene Demand. Fuel Oil Advances Slightly.

By Ralph T. Baker

CHICAGO, Jan. 28.—The weather again proved itself to be a factor of major importance in the marketing of petroleum products. It will be remembered that the balmy fall days continued to the first of the present year, giving motorists in the Eastern, Central and Northern States from 60 to 90 days additional motoring weather. The result was an unprecedented demand on the oil industry for gasoline and oil during the season. This demand was met—at a price, and petroleum products advanced steadily.

The reverse English is now being applied on marketers in the Chicago territory. The weather is again the cause, but the effect has been changed from good to bad.

Added to the above conditions, an appreciable amount of distress gasoline was purchased by brokers and marketers in December and started toward Chicago a few days ago. The result is a gradual softening of the refined market. Distress products which were thought to be a temporary influence only, at this time last week, are still casting weight on the weak side of the price structure. Marketers who have been well supplied confess there is not much of this stuff available, but then jobbers are not buying much. The result is that buying on the spot market is done through the marketers who are ready to make a price concession, and who can realize a good profit at a lower figure than the refiner can adopt.

Refiners who were holding out for 11¾ and 12 cents for New Navy gasoline during the previous week, dropped their prices ¼ to ½-cent during the week in review. Many refiners had held a firm belief that the Standard Oil Co. (Indiana) would again advance the gasoline tank wagon prices following the most recent advance in Mid-Continent crude by the Prairie Oil & Gas Co. Failure of the Standard to do so weakened their faith of its immediate accomplishment with the result that 12-cent gasoline does not seem to be an impending possibility.

Deprecate Advance Now

A majority of the refiners, marketers and jobbers feels that an advance in the tank wagon structure would not be justified at the present time in view of the curtailed consumption and the possibility of a long period of cold weather. They do assert, however, that jobbers will be quick to take advantage of any sag in gasoline prices, shortly after the first of February, with the result that an increased demand will be built up, and better prices will be assured. It is an almost universal opinion that the present dullness is temporary, and that every line of reasoning points to an early recovery and a constantly rising market.

Naphtha and Blends

Naphtha remained scarce and the price was firm. There was a good demand for the higher gravities of gasoline, but the scramble for these cuts seemed to have lost its impetus. Natural gasolines weakened slightly during the week. Wide spreads in price were noticed and Grades A and B sold for almost the same prices in some instances. There was little demand for Grade C.

Blends continued to attract some attention from Canada and Northern States, with chief interest in the 64-66, 450 end point stuff. It commanded a price of 10½ to 11 cents, coming close to the figure set for New Navy, some of which sold at 11 cents during the week. A majority of the sales made during the week showed New Navy prices to average 11¼ cents.

Kerosene

Kerosene was firmer under a continued domestic demand attributable largely to home oil burners. Gas oil also was in greater demand, with some refiners asking as high as 3¾ cents, but most sales being made under that figure. Straw distillate continued its upward price march.

Fuel Oil

Fuel oil advanced slightly, ranging from $1.10 to $1.20 for the 24-26 Oklahoma grade. As in the case of New Navy gasoline, there was some fuel oil caught in Chicago last week without a fixed buyer. As a result some cars without facilities for steaming to unload and even some zero cold test stuff went begging, and were bought at a price near $1. Many large industries in this region which have been accustomed to placing orders for a year's consumption of fuel oil about January 1, have failed to come into the market and there is every possibility they will not do so.

Heads of some industries argue that shutdowns are inevitable at certain periods. Oil contracts over a year would give them more oil than necessary if shutdowns became realities. These executives declare they are going to take a chance this year and buy only from month to month.

Prices for fuel oil are reported higher in the refinery district of the Mid-Continent than in the Chicago area. North Texas refiners were said to be asking as high as $1.50 per barrel for fuel last week. Kansas refiners were asking $1.20 to $1.30. The reason for the high prices in the Wichita Falls area is seen in the demands of the Katy Railroad for fuel. Kansas refineries were unable to more than meet the demand for that State.

Effect of Mexico

As a result of the disturbance in the Tampico region of Mexico, more attention is being paid the Smackover crude for its fuel possibilities. The factional war in Mexico has cut down the bunker fuel imports of the Mexican Petroleum Corp. and the Standard Oil Co. (Louisiana) to such a point they are compelled to purchase Smackover oil to fill their contracts with the Federal Government, according to current Chicago reports. This has caused advances in the value of that crude and fuel oil, and may be looked upon as a factor which will lead to other fuel oil advances.

The differential which has existed in the price of Smackover and El Dorado fuel oils is being wiped out gradually, according to a comparison of prices over a time. Much Smackover fuel sold in Chicago during the past week for $1. The same was true with El Dorado fuel, which brought slightly higher prices in some instances.

Oklahoma lubricants were stronger following the advance announced by Condon & Co. Pennsylvania lubricants kept pace with the steady march made by crude in that State, which topped a mark of $4.25 during the week. Gulf Coast zero oils were also strong. Wax was firm and continued scarce.

RE-ELECT GOODSON PRESIDENT

OKLAHOMA CITY, Okla., Jan. 28.—Ola Goodson, president of the Blackwell Oil & Gas Co., was re-elected by the board of directors at the annual meeting of stockholders at Blackwell, N. D. Kistler was elected vice president, J. W. Randall treasurer and A. W. Brooks secretary, who with E. C. Mullendore of Cleveland, Okla., R. C. Jones and E. J. Blank of Cushing, Thomas N. Berry of Stillwater, M. M. Lively and W. M. Vickery of Blackwell constitute the board of directors.

EASTERN REFINED MARKET STRONG; TRADE IS IN HEALTHY CONDITION

By N. O. Fanning

NEW YORK, Jan. 28.—The Eastern refined oil markets continue strong. The principal changes during the week consisted of advances of 2 cents per gallon in the gasoline tank wagon market in North and South Carolina and 1 cent in Virginia and West Virginia, made effective by the Standard Oil Co. of New Jersey. Prices in the Southern States are now 1 to 2 cents ahead of the northern Atlantic States. Advances of 1 to 2 cents in the latter are expected during the coming week.

Bulk gasoline market here is somewhat mixed. Offerings of tank car lots, delivered, at from 12 to 14 cents per gallon, are reported at different points by different marketers. There is said to be considerable Mid-Continent gasoline available at the higher quotation, while scattered offerings at 12 cents have been made.

Consumption of gasoline continues heavy for the winter months. There would already be a scarcity here were it not for the liberal stocks on hand at the close of 1923. Current output of gasoline is reported to have been cut down in the New England and Baltimore refining districts, now being operated on a slightly lower scale.

The belief prevails here that although the gasoline trade is in very healthy condition, there will not be a runaway market this year. This is due largely to the healthy condition of stocks of both gasoline and high grade crude. These stocks are in strong hands, and while a large advance might be highly beneficial to the trade, it is not expected refiners will be anxious to more than make a reasonable profit on this product. Rather they will seek to make other products, particularly lubricants, bear part of the burden of carrying the industry this year.

Lubricating Oil Outlook

The lubricating oil market is firm, with all indications pointing to further advances. This product is expected to enjoy a unique place this year, inasmuch as supplies are surprisingly small and stocks are in strong hands. During 1923 lubricant makers enjoyed good prices, in contrast to the radical cuts experienced by gasoline manufacturers. This year indications are lubricating oil will benefit by the unwillingness of many large refiners to mark up the gasoline too sharply.

Cylinder stocks are said to be extremely scarce, and the advances in Pennsylvania crude oil are taken as indications of a strong market for lubricants. The advances in Pennsylvania oil have amounted to about $1.50 per barrel, equivalent to more than 3 cents per gallon. Advances in other grades of crude have amounted to less than 50 cents. Part of the strength in Pennsylvania crude is credited to the success of the movement on the part of the Pennsylvania Crude Association to obtain recognition for that grade as a superior product.

Fuel Oil Firm

The bunker oil market is firm. The temporary decline in shipments of Mexican oil have not affected the market to any extent. Receipts of California fuel oil have been liberal. In two or three weeks the California fuel oil coming in here will cost about $2 per barrel, delivered, as against $1.35 to $1.75 for that coming in at present. This is the result of the recent advance in prices in California.

Oil Receipts Low

Oil receipts at Atlantic ports show a continued decline. The feature is continued small receipts from Gulf Coast ports. Receipts from Mexico show a notable gain, despite the temporary blockade of Tampico. Pacific Coast receipts were small, but this marks only a lull. Smaller Gulf Coast receipts are said to be the result of larger pipe line receipts at Atlantic refineries.

The following table shows the estimated daily average receipts of crude and refined oil at Atlantic Coast ports by water from the Gulf and Pacific Coasts, and imports from Mexico and other countries, for the last two weeks, with monthly record back to July 1, 1923, (figures in barrels):

Source—	Week Ended— Jan. 25	Jan. 18
Gulf Coast	130,000	117,000
Pacific Coast	127,000	136,000
Mexico, etc.	106,000	58,000
Total daily average	363,000	311,000

Monthly Record

	Gulf	Pacific	Mexico, etc.	Total
December	184,000	153,000	119,000	456,000
November	186,000	141,000	109,000	436,000
October	200,000	164,000	134,000	498,000
September	165,000	146,000	109,000	420,000
August	176,000	170,000	110,000	456,000
July	160,000	138,000	116,000	414,000

The market for Mexican crude oil is unchanged.

CANADIAN DEVELOPMENTS CAME LATE IN THE YEAR

(Continued from Page 118)

Talpey-Arnold syndicate secured some gas production in a test near Birch Lake and is going deeper for oil.

East Central Alberta in 1924

East central Alberta will be the chief field for drilling activity in 1924. Near the Montana border, the Sweetgrass district of southern Alberta, where about a dozen tests were spudded in or located a couple of years ago, has settled down to practical inactivity. To the west, Imperial Oil, Ltd. definitely disproved the possibilities of oil. To the east, the Canadian Oil & Refining (Rogers) well is still drilling. Most of the drilling, centered on Quarantine Reserve area near Coutts, Alta., is shut down owing to lack of funds. This area was expected to duplicate the Sunburst Field in Montana; but only one test, the Coutts Sweetgrass Oils (McLean) has been carried to a sufficient depth to indicate that the Sunburst arch does not extend this far north. At the close of 1923 the local companies interested in the Quarantine Reserve area were planning to pool their resources with a view to carrying a single test to a conclusive depth.

In northern Alberta, two tests in Peace River district were continued in 1923 without commercial results; and operators there are now planning to utilize the large waste gas production in this area for the manufacture of carbon black.

Gas Developments

In the direction of gas developments, the Northern Utilities, Ltd., has laid a pipe line from the Viking gas field to Edmonton, and is now delivering gas to that city and a number of towns; and has finished its No. 10 producing well in the Viking Field. In Southern Alberta the Canadian Western Natural Gas Co. is now supplying Calgary, Lethbridge and other places with gas from the Bow Island, Okotoks and Barnwell Fields, and is laying a pipe line to connect its main line with a new field at Foremost. This field, developed in 1923, represents probably the most important commercial result of all the 1923 drilling in western Canada. In three wells, an aggregate production of 27,000,000 feet a day was secured; and the field, which promises to duplicate the famous Bow Island Field, will be further tested in 1924. In the Barnwell Field, two tests were drilled, one productive; and further work may be done in 1924. No new work has been done, or is likely, in the old Bow Island Field.

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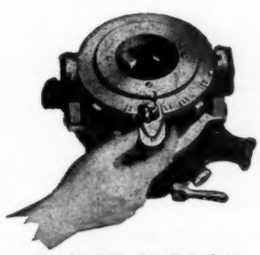

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It is general knowledge in the oil fields as well as elsewhere that No. 26 Beaver Ratchet Die Stock is the fullest measure of value that can be bought in a 1 to 2 inch die stock. Unlike other tools, this Beaver threads 1, 1¼, 1½ and 2 inch pipe with the same set of dies and without changing bushings. It's a real time and trouble saver. It's all there when you want it.

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BEAVER

The Easiest Way to Cut Good Threads

TRANSPORTATION LIMITS OUTPUT POSSIBILITIES OF MANY FIELDS

By N. O. Fanning

NEW YORK, Jan. 28.—Although 1924 brings hope of prosperity for the oil business, back in the minds of oil men who must view the situation from every angle and in a more general way there is always the disturbing possibility of the opening up of a new pool which will bring a new flood of oil onto the market. As one oil man put it the other day, "There is so much wildcatting going on that a new field might be opened up at any time. It is never safe to make predictions."

Despite recognition of the truth of that view of the matter, the possibilities of this year can be studied with considerable accuracy. The United States is so large in area that on first glance it seems that there must still be many large fields which are covered up. But in making estimates for 1924 alone, the matter is considerably simplified.

Few Areas Formidable

When it comes down to the heart of things, there are comparatively few areas in the United States in which the discovery of a very large pool would result in demoralizing the oil business this year. The reason for this is that areas of this description must lie within a convenient distance from existing transportation facilities.

Central Texas, for instance, is an ideal location for demoralizing oil pools, because there is already a network of pipe lines running across it, and these pipe lines run only a comparatively short distance to seaboard. Once crude oil gets to the seacoast it is within economic reach of practically every big oil refinery or oil market of the world.

Not only Central Texas but West Texas comprises an area in which another big field may be opened up at any time, although there is a chance that nothing like that will happen.

The discovery well on Hamilton Dome, Craig County, Colorado, is even now being loosely talked of as a big field, having a chance of flooding the oil markets. However, this field is so undeveloped and remote from the markets that even if it does yield 100,000 barrels daily (if it ever does) it will take months to get that much oil from it to markets. Scouts report that this district should be compared with the Wyoming fields, rather than with those of southern California or Central Texas, in gauging its probable output.

To date crude oil can be moved from the Rocky Mountain district to the seacoast of Texas by pipe line at the maximum rate of only 25,000 barrels daily, through the Standard-Sinclair pipe line. This pipe line took many months to build.

This practically bars Wyoming, Colorado, Montana and adjoining States as threats to the balance of the law of supply and demand in the oil business at least during 1924.

California's Threat

Southern California's oil district offers an example of an area which has all the requirements for demoralizing the oil business. The fields in this district are within a few miles of the seacoast, and in fact within a few miles of a good harbor. Santa Fe Springs, Long Beach and Huntington Beach are believed to be on the wane. Not much is expected of Torrance, but Compton, according to one oil man who has studied conditions there, offers possibilities of developing production of large dimensions. This field, however, is not looked upon as a threat for several months—probably not until the close of 1924.

The northern fields of California are expected to yield more oil this year than last, as there were many productive wells shut down which are now being opened up. But these fields are so far from the coast that it is not likely any increase in output will affect general market conditions, except on the Pacific Coast.

Little is expected from the southern fields of Mexico. These were so close to seaboard that the oil could be easily piped to the coast, and thence loaded on petroleum tankers. So far efforts to open up additional light oil fields south of the Tuxpan have been unsuccessful. Drilling has been interrupted by unsettled political conditions. But if a new field with large production were discovered close to seaboard, on the Isthmus of Tehuantepec, for instance, it would probably be a world market factor within a comparatively short time.

Venezuela is a country which contains oil resources surrounding a big interior lake, which is connected with the sea by an inlet. Across this inlet lies a bar which can be crossed only by vessels of extremely small draft. The dredging of this inlet, a work of many months, would have to be accomplished before Venezuela could flood the world with oil.

Colombia has big possibilities as an oil country, but the production there now is 400 miles from the seacoast.

Both Venezuela and Colombia will supply oil in large quantities in several years, but they do not constitute a threat, at least for 1924.

In order for any oil pool to demoralize the markets this year, it must have the following characteristics:

1. Production of 100,000 barrels daily or more.
2. Yield oil of 30 gravity or better.
3. Have complete transportation facilities.
4. Must be within reasonable reach of the seacoast.

DULL WEEK IN GROUP 3 REFINED MARKETS

(Continued from Page 22)

price concessions but others are and with the demand not strong buyers have been able to pick up some purchases under the general market. The demand for certain grades of blends has fallen off. That is the only reasonable explanation for some of the low priced shipments known to have been made out of this Group during the past week.

The latter part of last week there was little, if any, water white gasoline available under 5¾ cents. The domestic demand is exceptionally firm or advancing without the aid of export purchases in this Group.

Makers of distillates also report a strong demand. Some refiners are moving their output direct to the trade at 4½ for 38-40 straw. One of the largest refiners in the Group is still selling at 4 cents.

Fuel and Gas Oils

The spot price on fuel oil is unchanged. A majority of the refiners are getting from $1.15 to $1.20 for spot interstate shipments and from 5 to 10 cents more for deliveries within the State. The original contract adjustments made necessary when the Prairie Oil & Gas Co. made effective a four-grade price schedule are gradually being worked out. So far as known, all these adjustments have been in favor of the seller. The basis on which the contracts are now based varies so that it is difficult to determine what is the average figure based on present crude prices.

There is a strong tone in gas oil, with probably a majority of the refiners asking 3½ cents and more for 32-36 gravity. One purchase of 50 cars at 3⅝ cents during the week was reported.

Neutrals and Wax

Neutrals shared in the dullness of the past week. Contracts based on the crude price are being made with the provisions practically the same as last year. Re-attorney general in the Wilson administ- adverse to adding to their stocks when the current demand falls off. Prices are unchanged. No wax is available from the larger manufacturers, although numerous inquiries are being received. These buyers are seeking immediate shipments but are not willing to buy for delivery over the next three months.

U. S. DOMESTIC PETROLEUM EXPORTS

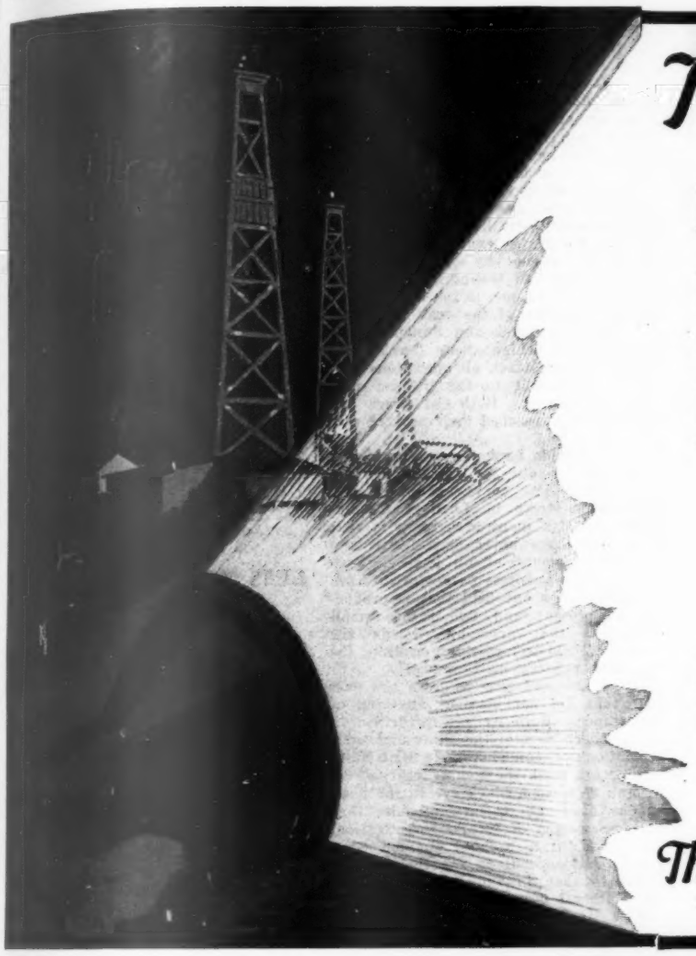
—Product—	Dec., 1923 Quantity Gallons	Dec., 1923 Value	12 Mos. End. Dec., 1923 Quantity Gallons	12 Mos. End. Dec., 1923 Value
Crude petroleum	86,894,592	$2,327,478	716,551,862	$23,111,616
Refined motor oils, total	317,065,712	25,941,479	3,270,638,102	336,539,065
Gasoline, naphtha, other light products	71,801,815	9,223,927	845,693,330	137,630,710
Kerosene	70,824,956	5,819,350	847,929,454	76,563,907
Gas and fuel oil*	141,400,184	3,793,281	1,228,594,295	38,708,049
Lubricating oils:				
Red and pale	19,259,810	3,764,453	186,347,147	$3,147,680
Black	3,455,020	466,971	47,155,711	6,561,902
Cylinder	10,243,204	2,810,394	114,252,692	$1,551,377
Light oils in small packages	80,723	62,103	664,973	696,144
Total lubricating	33,038,757 Pounds	7,104,921	348,420,523 Pounds	70,656,301
Lubricating greases	7,424,037	435,008	75,299,414	3,968,033
Paraffin wax:				
Unrefined	10,029,486	316,928	94,316,692	2,769,440
Refined	20,260,394	798,410	235,475,857	8,657,857
Total	30,289,880 Gallons	1,115,378	329,792,549 Gallons	11,427,305
Residuum and other pet. products n. e. s.	39,194	4,326	1,440,775	158,485

*Does not include fuel or bunker oil laden on vessels engaged in the foreign trade which totaled during December, 1923, 3,045,613 bbls., valued at $3,930,676, and during the 12 months ending December, 1923, 37,581,845 bbls. valued at $52,204,729.

COMPLETE RECORD OF STANDARD OIL DIVIDENDS, CAPITALIZATION AND RANGE OF SECURITY PRICES SINCE THE DISSOLUTION (1912-1923)

Company—	Present Par Value	Present Capitalization. Outstand.	CASH DIVIDENDS—Per Cent— 1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	Capitalization. at Dissolt'n.	Increases in Capitalization Through Stock Dividends and Subscription Rights ("S. D." indicates Stock Dividend—"S. R." indicates Sub. Rights)
Anglo-American Oil	£1	£3,000,000	20	15	30	30	30	30	25	20	20	20	25	20	£1,000,000	S. D. 100%, 1913; S. R. 50% at $7.50, 1918.
Atlantic Ref., com.	$100	$50,000,000	4	20	20	20	20	20	20	20	20	5	..	..	$5,000,000	S. D. 900%, 1922; S. R. 400% Pfd. at par, 1919.
Atlantic Ref., pfd.	100	20,000,000	7	7	7	7	..	..	..	..	..	..	..	..	.....	
Borne-Scrymser	100	1,900,000	12	35	20	20	20	20	20	20	20	20	20	20	200,000	S. D. 400%, 1922.
Buckeye Pipe Line	50	10,000,000	13½	70	16	16	15	18	19	16	16	26	40	40	10,000,000	
Chesebrough Mfg., com	100	1,500,000	17½	14	10½	14	14	10½	14	20½	40	40	40	50	500,000	S. D. 200%, 1916; S. R. 33⅓% pfd. 1919; S. R. 33⅓% pfd. 1921 at par.
Chesebrough Mfg., pfd	100	1,000,000	7	7	7	7	..	..	..	..	..	..	..	..	.....	
Continental Oil	25	10,000,000	8	8	8	9	12	12	12	12	12	12	6	70	300,000	S. D. 900%, 1913; S. D. 200%, 1920; S. R. 11 1/9%, 1920 at par.
Crescent Pipe Line	25	1,500,000	54½	6	6	6	6	6	6	6	6	9	12	12	3,000,000	
Cumberland Pipe Line	100	3,000,000	10	12	12	12	12	10	5	5	5	6	6	6	1,000,000	S. D. 100%, 1922; S. R. 50% at par, 1917.
Eureka Pipe Line	100	5,000,000	11	8	10	13	17	22	24	24	24	32	40	30	5,000,000	
Galena-Signal Oil, com	100	16,000,000	4	1	..	..	..	7½	12	12	12	12	14	16	8,000,000	S. D. 50%, 1913; S. R. 20% pfd. at par, 1918.
Galena-Signal Oil, pfd.	100	6,000,000	8	8	8	8	8	8	8	8	8	8	8	8	2,000,000	
Humble Oil & Ref.	25	43,750,000	4 4/5	8	8	2½	10	13½	..	..	..	..	..	..	.....	S. D. 1922, 75%; S. R. 75% at $250, 125% par, 1919.
Illinois Pipe Line	100	20,000,000	11	14	16	18	16	14	22	39	5	..	..	..	.....	
Imperial Oil, Ltd.	25	39,222,750	16	12	12	15	12	16	8	..	..	..	..	..	.....	S. R. 20% at par, 1917; 16⅔% at $75, 1920; 10% at $90, 1921.
Indiana Pipe	50	5,000,000	16	58	16	20	19	24	20	16	16	27	32	20	5,000,000	
Intl. Pet., Ltd.	none sh.	7,118,138	50c	50c	25c	*10	20	20	..	..	..	..	..	..	.....	S. R. 100% at par, 1920.
Magnolia Petroleum	100	180,000,000	4½	6	6⅔	8	8	7	6	6	4	..	..	..	.....	S. D. 100%, S. R. 25%, 1914; S. D. 25%, S. R. 50%, 1915; S. R. 15% 1916; S. R. 50% 1918; S. R. 33 1/3% 1919; S. D. 100% 1920; 50% 1922
National Transit	12.50	6,362,500	16	14	28	30	40	16	8	4	8	12	12	12	12,727,525	
New York Transit	100	5,000,000	10	96	16	20	16	22	20	16	17	34	40	30	5,000,000	
Northern Pipe Line	100	4,000,000	25	20	10	10	10	14	10	10	10	10	10	5	4,000,000	
Ohio Oil	25	60,000,000	9	40	43	80	88	96	96	92	50	29	57	20	15,000,000	S. D. 133 1/3% Illinois Pipe stock, 1915; S. D. 300%, 1922.
Penn Mex Fuel	25	10,000,000	..	..	..	..	..	..	..	..	..	..	..	..	.....	
Prairie Oil and Gas	100	54,803,400	8	23	22	32	26	20	20	18	..	..	6	25	18,000,000	S. D. 150% Prairie Pipe stock, 1915; S. D. 200%, 1922.
Prairie Pipe Line	100	81,000,000	8	16	12	12	12	30	35	35	..	..	..	..	.....	S. D. 200%, 1922.
Solar Refining	100	4,000,000	10	15	10	50	30	15	35	10	10	10	55	20	500,000	S. D. 300%, 1913; S. D. 100%, 1923.
Southern Pipe Line	100	10,000,000	10	8	10	17	20	23	24	24	24	30	32	28	10,000,000	
South Penn Oil	100	20,000,000	..	4½	13	20	20	20	20	32	14	10	28	30	2,500,000	S. D. 300%, 1913; S. R. 100%, 1913; S. D. 60%, 1917.
South W. Penn. P. L.	100	3,500,000	8	7	6	8	12	12	12	12	12	16	20	20	3,500,000	
S. O. of California	25	242,926,801	8	16	15½	14	†11	12½	10	10	10	10	10	2½	25,000,000	S. R. 80%, 1912; S. R. 10%, 1914; S. D. 50%, 1916; S. D. 33 1/3%‡
S. O. of Indiana	25	220,181,638	10	16	16	28	24	24	24	12	12	25	52	13	1,000,000	S. D. 2300%, 1912; S. D. 150%, 1920; S. D. 100%, 1922.
S. O. of Kansas	25	8,000,000	8	15	24	24	24	24	24	16	12	13	40	5	1,000,000	S. D. 100%, 1913; S. D. 300%, 1922.
S. O. of Kentucky	25	16,715,221	14	15	12	12	12	12	16	20	16	19	10	..	1,000,000	S. D. 200%, 1914; S. D. 100%, 1917; S. R. 33 1/3%, S. D. 33 1/3%, 1920
S. O. of Nebraska	100	3,000,000	10	20	10	20	20	20	20	20	20	20	20	20	600,000	S. D. 33 1/3%, 1912; S. D. 25%, 1913; S. D. 200%, 1921.
S. O. of N. J., com.	25	498,587,125	4	20	20	20	20	20	20	20	20	20	20	60	20	98,338,300	S. D. 400%, 1922; S. R. 100% pfd., 1919; S. R. 100% pfd., 1922.
S. O. of N. J., pfd.	100	199,972,000	7	7	7	7	1¾	..	..	..	..	..	..	..	.....	
S. O. of New York	25	225,000,000	5 3/5	16	16	16	16	12	12	8	8	6	8	6	15,000,000	S. D. 400%, 1913; S. D. 200%, 1922.
S. O. of Ohio, com.	100	14,000,000	10	16	16	16	16	16	16	21¾	24	24	20	5	3,500,000	S. D. 100%, 1916; S. D. 100%, 1922; S. R. 100% pfd., 1920.
S. O. of Ohio, pfd.	...	7,000,000	7	7	7	7	1¾	..	..	..	..	..	..	..	.....	
Swan & Finch	100	1,806,200	..	..	..	..	5	7	2½	..	..	..	5	..	100,000	S. R. 400%, 1912; S. R. 100%, 1916; S. R. 50%, 1918.
Union Tank Car, com.	100	18,000,000	5	7	7	7	7	5	5	5	5	5	..	..	12,000,000	S. D. 50%, 1922; S. R. 100% pfd., 1920.
Union Tank Car, pfd.	100	12,000,000	7	7	7	5½	..	..	..	..	..	..	..	..	.....	
Vacuum Oil	25	60,000,000	10	16	8	8	8	10	8	8	8	6	6	6	2,500,000	S. R. 500% par, 1912; S. D. 300%, 1922.
Washington Oil	10	100,000	..	..	20	20	..	40	40	40	..	80	80	..	100,000	

*On shares of £1 par value. †Includes 2% in Liberty Bonds. ‡Also 1917; S. D. 100%, 1922; S. R. 12½%, 1923. §Also S. D. 66 2/3%, 1922. —Courtesy W. C. Coles & Co., New York



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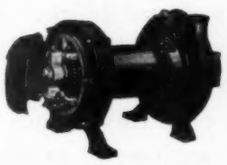

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That is just what the three De Laval Crude Oil Purifiers shown in the illustration below are doing. The crude they are handling is from the Dutcher sand of the Bristow, Okla., field. As it enters the Purifiers it contains 13 per cent of b.s. which other commercial treating methods have failed to break up.

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De Laval Crude Oil Purifiers are now furnished with tight oil connections throughout. This further reduces the low evaporation losses typical of centrifugal purification.

FEW NEW OPERATIONS IN ROCKY MOUNTAINS

(Continued from Page 110)

for the finding of new fields; however, great areas of this State are covered with a thin layer of Tertiary covering that could mask structures like Salt Creek or even larger fields.

Montana offers much virgin territory. The past year has been disappointing there as several dry holes resulted where oil was confidently expected. However, the State has not by any manner received a thorough testing. The number of fields is the same at the end of 1923 as the beginning of the year, two light oil fields, Cat Creek and Sunburst, and one black oil field at Soap Creek, with several possible black oil operations that might be brought to the title of field with development. Both Cat Creek and Sunburst have reached their peak of production.

Colorado Looks Promising

Colorado is due for considerable activity in wildcat areas because of the Wellington strike in Larimer County. There are still many structures in that State that have never been tested and the large amount of oil shale is also held out by promoters as a source of oil.

Colorado has one field that is producing at present and two rather small operations that are shut down; the Florence Field is furnishing crude to the Standard refinery at Florence.

Idaho has had two wildcats the past year that did not discover anything of importance. Both wells were drilled in the southern part of the State and some promotions are under way in that State to do more work the coming year.

Utah received a black eye in the past, but some of the oil men consider that State as worthy of further investigation. The Utah Oil & Refining Co. opened a gas production, but so far the only oil found is that in the San Juan near the southeast corner of the State.

New Mexico is attracting considerable attention due to the strike of the Midwest on the Hogback Dome on the Navajo Reservation. This is the only actual production found so far but the Producers & Refiners Corp. has a gas well near Gallup and the same firm is drilling a test on Table Mesa and another on the Totico Dome. The Midwest has an estimated production of 3,000 bbls. of very high gravity oil on the Hogback, but this has never been tested to see if it is correct. The Midwest has a duster at the Ambrosia Lake Dome and another wildcat drilling on the San Mateo structure.

WYOMING-MONTANA-UTAH ANNUAL REPORT, 1923

Completions by Fields

District—	Comp.	Prod.	Dry	Gas
Big Muddy	10	1,710	1	0
Salt Creek-Teapot	325	103,995	6	11
Lance Creek	7	3,100	2	1
Warm Springs, Grass Creek, etc.	4	150	1	2
Big Horn Basin	16	80	5	7
Lost Soldier and Carbon Co.	17	12,250	4	6
Rock River district	19	1,850	8	0
Fremont County	7	450	3	1
Mule Creek	3	400	0	0
Osage	13	380	1	0
Natrona County	20	2,105	7	4
Lincoln and Uintah Counties	1	20	0	0
Baxter Basin	1	0	0	*
Miscellaneous Wyo.	7	55	2	3
Cat Creek	30	2,880	7	0
Kevin Sunburst	196	11,808	48	9
Miscellaneous Mont.	22	0	20	2
Utah	1	0	0	1
Total 1923	699	141,233	115	48
Total 1922	560	204,871	63	23
Difference	139	*63,638	52	25

Initial gas production, 343,250,000 feet.
*Decrease.

Completions by Months

Month—	Comp.	Prod.	Dry	Gas
January	28	7,790	3	1
February	36	9,180	2	3
March	38	7,500	6	3
April	38	7,570	6	2
May	34	6,295	7	4
June	61	9,180	7	5
July	82	16,362	22	8
August	80	16,456	9	5
September	97	23,358	10	5
October	72	11,525	19	4
November	65	15,764	10	3
December	68	10,853	14	5
Total	699	141,233	115	48
Total 1922	560	204,871	63	23
Total 1921	417	104,969	88	14
Total 1920	348	41,454	76	*..
Total 1919	304	52,065	77	*..

*Figures not available.

COLORADO-NEW MEXICO, 1923

	Comp.	Prod.	Dry	Gas
Colorado	2	500	0	1
New Mexico	7	2,800	3	1
Total	9	3,300	3	2

WYOMING-MONTANA

Production by Fields, Based on Pipe Line Runs

Salt Creek	33,644,630
Teapot	868,300
Big Muddy	1,403,142
Lance Creek	395,491
Pilot Butte	25,497
Lost Soldier	112,300
Rock River	1,314,515
Grass Creek	1,514,425
Hamilton Dome	1,652,372
Elk Basin	176,467
Greybull	694,902
Osage	13,751
Ferris	207,395
Notches	160,450
Poison Spider	*46,704
Cat Creek, Mont.	757,542
Kevin Sunburst, Mont.	2,212,105
Miscellaneous	465,613
	396,485
Total	46,964,421
Total, 1922	28,832,334
Increase	16,232,087
Total, 1923	46,964,421
Total, 1922	28,832,334
Total, 1921	20,956,995
Total, 1920	17,201,830
Total, 1919	†13,500,000

*Producing since August. †Producing since October. ‡Approximate.

LESS COMPLETIONS IN CENTRAL WEST

(Continued from Page 110)

Seneca	29	1,524	12	0	0
Lucas	7	142	1	0	15
Ottawa	38	351	0	1	21
Darke	115	2,460	11	1	6
Hardin	12	32	1	7	0
Defiance	1	30	0	0	0
Wyandot	1	0	1	0	0
Pauling	3	85	0	0	0
Shelby	3	6	0	0	0
Total	697	13,151	75	17	670

Michigan

But one well was reported completed in Michigan during 1923 and that was located in Lapper County, and recorded in September as dry at around 2,500 feet

Central Ohio in 1923

Completions in the Central Ohio fields for the year 1923 were by months as follows:

Month—	Comp.	Prod.	Dry	Gas
January	70	109	24	30
February	26	21	10	13
March	42	198	12	21
April	42	163	13	20
May	29	91	11	10
June	30	148	6	16
July	46	65	9	5
August	67	218	17	40
September	56	331	20	23
October	51	30	15	13
November	95	173	27	43
December	88	110	29	57
Total	642	1,657	193	365
Total 1922	906	2,104	214	387
Difference	264	447	21	22

The above wells were distributed among the various counties of Central Ohio as follows:

County—	Comp.	Prod.	Dry	Gas
Licking	3	5	1	1
Fairfield	9	0	5	4
Knox	93	458	16	30
Ashland	45	12	15	29
Medina	99	79	33	59
Lorain	22	0	11	11
Wayne	151	317	49	84
Richland	28	0	7	21
Vinton	3	0	3	4
Hocking	24	0	5	19
Holmes	73	766	23	34
Jackson	33	0	11	23
Athens	32	0	7	25
Meigs	2	30	1	1
Gallia	3	0	3	0
Cuyahoga	3	0	3	1
Coshocton	2	20	0	0
Lawrence	1	0	1	0
Huron	*1	0	0	11
Total 1923	642	1,657	193	365

Indiana in 1923

Indiana's completions for the year of 1923 were by months as follows:

Month—	Comp.	Prod.	Dry	Gas	Old Wells Abd.
January	10	303	1	0	1
February	11	159	4	0	3
March	13	143	7	0	1
April	15	359	2	0	1
May	12	250	1	0	23
June	22	549	3	0	1
July	14	165	4	0	1
August	27	1,132	7	1	51
September	15	518	3	1	10
October	14	291	3	1	15
November	9	45	3	1	27
December	13	497	6	0	19
Total 1923	175	4,411	49	4	177
Total 1922	231	3,300	55	6	76
Difference	66	1,111	6	2	99

(Continued on Page 182)

WHAT HAPPENED IN 1923 AND REASONS

(Continued from Page 19)

nia. All of the large companies were increasing their docking and shipping facilities to the greatest extent and for the first time in the history of California and the oil industry, large shipments of California crude were being made to the Atlantic Coast markets which formerly had drawn all their supplies from the Mid-Continent, Eastern, Gulf Coast and Mexican fields. These shipments of crude in April averaged more than 1,000,000 barrels weekly.

The increase in prices for crude which had been made earlier in the year began to bear fruit in other sections of the country. In February an important extension was made to the Smackover Pool in Arkansas by a well which flowed at the rate of 2,400 barrels an hour for a time and then settled to 30,000 barrels a day. This resulted in feverish activity in that section, with the result gushers were of everyday occurrence. In every other section of the country drilling activity was evident and production in Oklahoma was mounting steadily with the Burbank and Tonkawa Fields making new high records for output.

Proration Made Necessary

With the flood of California crude invading the Atlantic Seaboard markets, purchasers of Mid-Continent, Eastern and Gulf Coast crudes began to reduce their orders and buy more of the cheap oil being sent around through the Panama Canal from the Pacific Coast. On April 11, the price of crude in the Eastern fields was cut 25 cents. Buyers in Oklahoma, Kansas and Texas followed on April 23 with a 10-cent reduction and made three further cuts of 10 cents each during May. Substantial reductions were made in prices in other fields of the country, the cut in California ranging from 1 to 41 cents.

Price reductions had little effect on drilling operations. Oklahoma was making new records and during the week ended June 16 the estimated production of that State averaged 527,560 barrels a day, with Burbank and Tonkawa each producing more than 100,000 barrels. California was producing 755,570 barrels daily and the output of the entire United States was more than 350,000 barrels daily greater than it had averaged in January. Increasing amounts of California crude were being shipped to the Atlantic Seaboard, with correspondingly less amounts of Mid-Continent, Gulf Coast and Eastern oils being bought, so storage in the latter three areas was being filled rapidly.

The inevitable happened June 26 when the Prairie Oil & Gas Co., dominant crude purchaser in the Mid-Continent territory, placed proration in effect. Other purchasers followed suit and the real depression in the producing circles in the territory east of California started. Refiners in the Mid-Continent area had been feeling the depression for some time because California gasoline was being shipped to Eastern markets and Eastern refiners were able to sell gasoline from California crude at prices which made competition from Mid-Continent refiners out of the question. Gasoline made in California was sent around by the Panama Canal and then shipped as far west as Chicago and sold in Chicago, one of the principal markets for Mid-Continent refiners, at prices lower than Mid-Continent gasoline could be marketed for.

Then Came Powell

To cap the climax, the Powell Field in Texas started its spectacular rise. The McKie well there was completed in May and the rush was on. All wells in the field were drilled with rotaries and could be completed in three weeks or so. The oil was of high gravity, ranging around 37 degrees. Starting from almost nothing in May, the Powell Field poured forth this high-grade oil in such a volume it established a new record in output, rapidly and steadily increasing its production until the output reached 354,-893 bbls. on November 13.

Powell was the straw that broke the camel's back in the Mid-Continent territory. The oil sold for $1 a barrel. Oklahoma, Kansas and North Texas crude was cut on September 19 with prices of a new schedule of gravities ranging from 90 cents to $1.75 and a further cut was made November 8 with prices then ranging from 75 cents to $1.25.

Proration accomplished its purpose in the Mid-Continent territory, as it usually does. Production in Oklahoma dropped to below 370,000 bbls. daily by the end of the year, a drop of more than 150,000 bbls. a day from its high point of the year. Operators in the Burbank Field in Oklahoma made a "gentlemen's agreement" restricting drilling operations to an absolute minimum with the result the output of that field dropped to below 70,000 bbls. daily. Tonkawa experienced a slump. After Powell was opened up to the full extent of its capacity on November 13, it fell off rapidly, its drop being as spectacular as its rise. During the same period, California passed its peak and its output began to drop materially week after week. Its greatest average output was during the week ending August 25 when it averaged 882,000 bbls. a day. At the end of the year its production was down to 700,000 bbls., a drop of more than 180,000 bbls. daily while Powell had fallen to around 90,000 bbls. daily.

Prime Cause of Depression

The prime cause of the depression in 1923 was the enormous overproduction in California and the sending of this flood of cheap oil to eastern markets of this country, thereby shutting off these markets from producers in the eastern, Mid-Continent and Gulf Coast territories which formerly had supplied them. The most serious effect probably was felt by the small producer who was forced, in many instances, to shut in his wells. This pinching in of small producers not only worked a hardship on the producer but quite often ruined his wells. The United States is dependent upon the production from the small, settled producers of the country for its main source of supply of petroleum and any injury done these producers is of inestimable harm to the industry at large. There is no doubt these small wells were injured by the enforced shut down. After the lifting of proration, it was estimated the output of many of these small producers had declined 12 per cent.

Looking at the other side of the picture, it seems now producers in the Mid-Continent and eastern fields will benefit to some extent from their inability to sell their oil in 1923. Much of this oil was placed in storage and this stored oil will be a mighty valuable asset during 1924.

Conditions now seem most promising for all branches of the oil industry. Prices have been advanced rapidly and materially in every field of the United States since the first of the year, even California getting an increase of 25 cents a barrel, the first price advance in that territory in more than three and one-half years. Consumption, which increased more than 18 per cent in 1923, shows no signs of dropping and every sign of recording another big increase during 1924. Production has been falling steadily until now it is below what should be produced under normal conditions. There is no new big oil field in sight at this time and it is estimated at least four big fields, each capable of producing 100,000 bbls. daily, must be developed during 1924 to care for the requirements of this country.

Hence, it appears at this time as if the petroleum industry might be confronted during 1924 not with the problem of caring for an excess amount of oil but of finding sufficient petroleum to supply the needs.

4,000-BARREL VENEZUELA WELL

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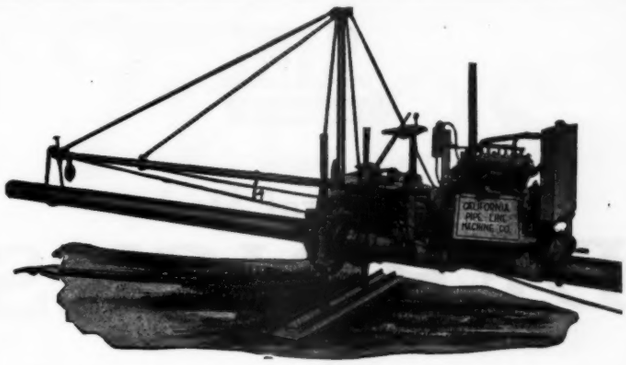

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GULF COAST DULLEST SINCE SPINDLETOP

(Continued from Page 90)

March	116	73,358	35
April	130	76,708	47
May	138	41,020	53
June	128	40,663	49
July	116	38,011	43
August	142	43,931	42
September	118	28,314	45
October	113	41,049	26
November	138	32,044	42
December	146	36,858	38
Total 1922	1,511	552,097	539

Gross Production

Gross production in the Coastal Pools and southwest districts, for 1923, is estimated at 38,516,691 bbls., a decrease of 2,165,186 bbls. from the figures for 1922.

The gross stocks of Coastal heavy gravity crude at the close of December are estimated at 17,475,500 bbls., a decrease of approximately 590,000 bbls. since November 1.

The following table gives the estimated gross production for each month, also the gross since the opening of the Coastal territory:

GROSS PRODUCTION BY MONTHS, 1923

Gulf Coast and Southwest Districts

1923—	Gross Bbls.
January	3,787,884
February	3,094,620
March	3,218,878
April	3,226,860
May	3,261,324
June	3,181,200
July	3,439,357
August	3,432,227
September	3,110,940
October	3,026,778
November	2,929,170
December	2,807,453
Total 1923	38,516,691
Decrease	2,165,186
1922—	Gross Bbls.
January	3,277,039
February	3,121,450
March	3,4[illegible]3,730
April	3,436,150
May	3,399,608
June	3,871,830
July	3,210,306
August	3,316,587
September	3,124,410
October	3,585,378
November	3,515,750
December	3,419,378
Total 1922	40,681,877
Gross production 1921	37,660,000
Gross production 1920	31,146,203

The following table shows the estimated gross production by districts:

	1923	1922
Batson	458,502	448,739
Blue Ridge	328,035	469,013
Barber Hill	227,492	235,265
Dayton	26,094	27,189
Damon Mound	886,500	919,873
Edgerly (La.)	207,179	133,724
Goose Creek	6,323,232	5,118,862
Humble	2,380,930	2,341,831
Hull	7,787,395	7,337,868
Jennings (La.)	208,569	184,860
Markham	39,299	31,481
Orange	5,313,655	5,714,571
Pierce Junction	352,039	1,093,410
Spindletop	324,795	294,138
Saratoga	640,508	648,758
Sour Lake	1,405,215	1,653,307
Somerset	1,253,217	663,783
Vinton (La.)	2,098,927	1,349,982
Welsh and Anse Bute..	26,611	30,329
West Columbia	6,550,031	11,883,511
Miscellaneous	1,679,265	114,583
Total	38,516,691	40,681,877

Luling, Laredo and Milam County shallow sands included in miscellaneous. Luling was estimated for part of the year in the absence of complete reports, but the gross will aggregate close to 1,000,000 bbls. The Laredo reports are also incomplete, hence the total miscellaneous may show greater than the figures given when complete reports are compiled. The West Columbia Pool declined 5,333,480 bbls. and Pierce 741,371 bbls.

PRODUCTION TOTAL

Gulf Coast and Southwestern Fields, by Years, 1901 to December, 1923, Inclusive

1901	3,593,112
1902	18,013,402
1903	16,146,191
1904	24,441,041
1905	34,610,882
1906	20,484,208
1907	16,241,460
1908	15,556,295
1909	10,755,799
1910	9,924,796
1911	11,402,184
1912	8,623,211
1913	8,649,152
1914	11,362,797
1915	21,198,083
1916	21,374,635
1917	23,973,694
1918	19,311,005
1919	23,839,043
1920	31,146,203
1921	*37,660,000
1922	†40,681,877
1923	†38,516,691
Total	465,811,665

*Includes Laredo and Somerset.
†Includes Luling, Laredo and Somerset.

SWIFT CHANGES IN NORTH CENTRAL TEXAS

(Continued from Page 78)

fore derricks were springing up in all directions from the discovery well and several wells are drilling at various depths, with two semi-completions (offset to the discovery well) credited with showing initial from 200 to 400 bbls. each daily at the discovery pay sand depth.

The largest producer completed during the year in the county was the Texhoma Oil & Refining Co.'s No. 16 Waggoner, which showed 650 bbls. at completion, but a few days later flowed 1,200 bbls. daily on the gauge.

Completions reported for 1923 numbered 715 (this includes Burkburnett) as against 785 for 1922, a loss of 70. Dry holes were listed at 280 against 231 for the previous year, an increase of 49 disappointments.

In the South End

Summarizing field activities for the south section of the field, Young County, reported 159 completions for 1923, as against 305 for 1922, a loss of 146, or nearly 50 per cent. Dry holes numbered 83 compared with 79 in 1922, an increase of 4. Six gas wells were brought in and 15 in 1922, a decline of 9. Stephens County completed 206 wells in 1923 and in 1922 it was credited with 374 completions, a decrease of 168. Dry holes were reported at 48 as against 92 for 1922, a difference of 44. Gas wells numbered 14, as against 16 for 1923, a loss of only 2. Completions numbered 249 in Eastland County in 1923 with 319 reported in 1922, a loss of 70 for the year. Seventy-one dusters were drilled and in 1922 there were 62 disappointments, an increase of 9. Gas wells numbered 26 in 1923 as against 18 for 1922, an increase of 8.

The only large spread in completions in any one section of the entire field is the wildcat territories, which reported 940 completions in 1923 and in 1922 numbered only 342, a gain of 598 wells.

The first six months of the present year Archer County was tabulated in the wildcat column, which in a measure accounts for the extreme difference, though during 1923 many tests were drilled in the outlying counties of the field from which 282 dry holes were reported in 1923 as against 136 in 1922, a gain of 146. Gas wells numbered 35, as against 12 for 1923, an increase of 23 gassers.

The summary shows as to totals, 2,668 wells completed in 1923 as compared with 2,125 in 1922, a gain of 541 for the year in review. Dry holes for the year numbered 921, as against 600 for 1922, a difference of 321. Gas wells totaled 81 for 1923, there were reported 62 during 1922, a gain of 19 gassers during the year.

Production 1923

In spite of the depressing conditions that were encountered by the operators and producers in the North Central Texas Field during 1923, crude oil was produced and run amounting to 45,543,700 bbls. Compared with 1922, the results were not so discouraging, as the previous year with many conditions in its favor, produced 49,305,657 bbls., a loss for the most discouraging year in the history of the oil industry in Texas of 3,762,587 bbls.

The Wichita-Electra district eclipsed all other pools in the field with a total of 14,759,339 bbls., as against 8,702,[illegible] for 1922, a gain of 6,057,293 bbls. Stephens County ranked first in the production column in 1922, but must be contented with second place in 1923 reporting for the past year 9,997,901 bbls., as compared with 15,191,315 bbls. for 1922, a loss of 5,193,414 bbls. for the year or around a 33⅓ per cent loss.

That Burkburnett, a sand producing pool, now five years old, and with be

little drilling and credited with practically no new production during the year (the Hirschi Pool excepted, which is producing no large amount of crude), reported for the past year 9,135,232 bbls., as against 11,591,322 for the previous year, a decrease of 2,456,090 bbls., or a little in excess of 20 per cent loss. Eastland County ran 4,874,972 bbls. for 1923, a loss of 1,090,107, as compared with 1922.

The miscellaneous pools hung on fairly well. Production credited to those various sections of the field in 1923 was 7,365,733 bbls., as against 8,446,102 bbls. for 1922, a loss to the several pools classified in that column of 1,080,269 bbls. for the year in review.

The wildcat territories are attracting but little attention at the close of 1923. The Panhandle section is still almost an unknown and undeveloped territory. It has five oil producing wells with an estimated production of around 200 bbls. each of a heavy congealed oil. Some storage has been erected. There is talk of a pipe line being laid and refineries to be erected, but at this date it is not yet established as a producing pool and its future is problematical.

Mitchell County is slowly being developed. It has at present around 800 bbls. daily production, the producing completions only show around 200 bbls. initial. Further drilling is necessary in order to determine what that county has in store for the operator. Other sections of the field offer nothing of an interesting nature. All of the tests are shut down waiting on an opportune time to again start the bit to chugging.

NORTH CENTRAL TEXAS

Summary of Field Operations for 1923

District—	Initial Comp.	Prod.	Dry	Gas
Wichita-Electra	521	29,086	201	0
Burkburnett	194	17,509	54	0
Stephens Co.	206	33,967	48	14
Eastland	240	15,764	71	26
Young	159	7,597	83	6
Archer Co. (last 6 mos.)	397	30,646	122	0
Wildcats	940	53,257	282	35
Total 1923	2,666	185,826	861	81
Total 1922	2,125	245,108	600	62
Difference	541	59,282	261	19

Summary Field Operations by Months, 1923

Months—	Initial Comp.	Prod.	Dry	Gas
January	199	9,712	67	7
February	266	15,875	88	8
March	234	13,785	77	3
April	241	19,803	66	1
May	329	33,855	78	8
June	346	26,170	90	7
July	359	23,524	126	13
August	254	11,480	114	12
September	122	7,784	51	6
October	124	9,279	50	8
November	75	7,418	25	4
December	117	7,141	29	4
Total 1923	2,666	185,826	861	81

Total Production by Months, 1923

Wichita-Electra—	Daily Aver.	Mo. Prod.
January	36,102	1,119,160
February	31,464	880,985
March	36,554	1,133,194
April	35,956	1,078,675
May	39,833	1,234,830
June	42,806	1,284,185
July	52,800	1,636,778
August	40,372	1,251,544
September	40,182	1,205,470
October	49,675	1,539,923
November	40,335	1,210,055
December	38,211	1,184,540
Total		14,759,339
Burkburnett—		
January	28,561	885,395
February	24,432	684,103
March	27,974	867,195
April	24,625	738,745
May	24,053	745,640
June	25,215	756,455
July	29,418	911,968
August	23,579	727,965
September	23,142	694,260
October	27,307	846,510
November	21,541	646,240
December	20,347	630,756
Total		9,135,232
Stephens County—		
January	34,261	1,061,095
February	29,950	838,600
March	33,387	1,034,997
April	26,505	795,165
May	29,146	903,525
June	32,385	971,565
July	32,017	1,092,520
August	23,135	717,200
September	19,874	592,225
October	24,167	725,020
November	20,287	608,615
December	21,206	657,370
Total		9,997,901
Eastland County—		
January	13,267	411,280
February	11,726	328,335
March	13,783	427,280
April	11,807	354,200
May	11,015	341,565
June	10,532	326,480
July	12,285	380,835
August	8,609	266,879
September	19,874	592,225
October	24,167	725,025
November	7,614	228,410
December	6,570	203,175
Total		3,784,865
Other Fields—		
January	26,914	834,340
February	20,869	584,320
March	22,985	712,535
April	20,946	628,370
May	19,282	597,744
June	20,061	601,840
July	24,390	756,040
August	17,202	533,295
September	16,652	499,555
November	7,614	228,410
November	16,170	485,100
December	17,220	533,820
Total		7,365,733

Total Year 1923

January	4,311,280
February	3,316,340
March	4,175,196
April	3,595,160
May	3,822,304
June	3,940,530
July	4,778,155
August	3,496,879
September	3,227,690
October	3,990,448
November	3,178,420
December	3,209,660
Total	45,043,070

Production by Districts, 1923

Wichita-Electra	14,759,339
Burkburnett	9,135,232
Stephens County	9,997,901
Eastland	3,784,865
Other fields	7,365,733
Total	45,043,070
Crude used by small refineries and for field work not reported (estimated	500,000
Total year 1923	45,543,070
Total year 1922	49,305,657
Difference	3,762,587
Production 1921	67,797,526

SUPPLY STORE MEN HOLD TULSA MEETING

A meeting of all branch store managers, shop foremen, field and city salesmen and heads of departments of the International Supply Co. was held at the offices of the Oklahoma Iron Works, in Tulsa, Saturday. About 60 men, including representatives from practically all sections of the country, were present.

The principal speakers were George Bell, of the American Steel & Wire Rope Co.; Tom Moore, of the Kewanee Boiler Co.; F. G. Harris, of the South Chester Tube Co.; J. D. McLin and C. A. Wilhoit, of the New York Belting & Packing Co.; H. G. Durnell, of the Union Machine Co.; W. H. McKissick, of the Dunn Manufacturing Co., and M. B. McMurray, of the M. B. Skinner Co. Talks by the various department heads included discussion of the establishment of new stores at Stroud, Okla.; Eureka, Kans., and Fort Collins, Colo.

Due to the success of this meeting, similar gatherings are to be held semi-annually.

HARRY GAFFNEY DEAD

Harry Gaffney, well-known oil operator and chemical manufacturer, died at Tarpon Springs, Fla., Monday, January 28. He was a resident of Bradford, Pa. Mr. Gaffney operated in the West Virginia and Ohio fields as a member of the firm of Gaffney & Simons and in the Oklahoma field as a member of the firm of Bird, Gaffney & Simons and Clint Moore & Co., and was a large shareholder in the Gaffney-Woods Products Co., Bradford, Pa. He was a thirty-third degree Mason. The funeral will be held in Bradford.

COX AGAIN CONVICTED

HOUSTON, Tex., Jan. 29.—S. E. J. Cox, oil promoter, was sentenced to serve five years in the Federal penitentiary and pay a fine of $15,000 by Federal Judge Hutcheson this morning following his conviction on a charge of using the mails to defraud. The sentence is to run concurrently with one of eight years recently assessed against him in Fort Worth after his trial with Dr. Frederick A. Cook.

E. O. Glenn, tried jointly with Cox, was given his choice of paying a fine of $5,000 or serving 30 days in jail and paying $3,500.

Tycos

Testing Apparatus

Tycos Cleveland Open Flash Tester No. 1755A for determining the flash and fire test of lubricating oils is designed to meet the specifications of the American Society of Testing Materials and the Interdepartmental Specifications Committee on Petroleum Products. This apparatus includes many advantages in style and design over any instrument of this type previously offered on the market.

Refiners and Oil Men are requested to write for the latest *Tycos* Catalog of Temperature Instruments for the oil refinery and laboratory. A new one has just been printed.

Taylor Instrument Companies
Rochester, N. Y., U. S. A.

Canadian Plant: *Tycos* **Bldg., 110 Church St., Toronto**
There's a *Tycos* or *Taylor* Temperature Instrument for every purpose.

CARBON
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25 CENTS per line first insertion; 15c per line each additional insertion. Cash in advance.

CLASSIFIED WANTS

COPY must be in our office Friday prior to date of issue. Average 6 words to the line. Cash in advance

LEASES—PRODUCTION

6,000 ACRES for a test well, south end Lonoke County, Ark. Address Box 222, England, Ark.

IF YOU have leases in shallow production and need capital, address 20 Lindero Avenue, Long Beach, Calif.

ROLALTIES and drilling contracts in the Northern Colorado Oil Fields. Ahlstrand, Greeley, Colorado.

ACRES, 40—$200 payments, $5 monthly; truck and poultry land; near town; Missouri; a snap. Box 198, Mt. Vernon, Ill.

DEPARTMENTAL leases in Carter, Stephens, Pontotoc, Coal, Marshall, and other southern counties. Z. J. Harrison, Hugo, Okla.

SHALLOW PRODUCTION—40 acres, 7 wells equipped; 100 barrels; 400 feet deep; 38 gravity; $60,000. Magill Co., Moran, Texas.

I HAVE 7,000 ACRES to give for one test well. Will furnish maps and report. Fred Stewart, 1236 South Cheyenne St., Tulsa, Okla.

3,000 ACRES lease for 3,500-foot well; Barton County, Kansas. Two blocks; write for particulars. M. C. Trumbull, Hoisington, Kansas.

FOR SALE—160 acres; 12 miles north Wichita, Kans.; well improved; 2 houses; clear of incumbrance. 2514 Cissna, Kansas City, Kans.

PRODUCING oil wells for sale, by owner, Arkansas-Louisiana district. Address Box A-53, care The Oil and Gas Journal, Tulsa, Okla.

PRODUCTION, leases, royalties, refineries and drilling blocks, with good geology. Fairmount Investment Corp., Oklahoma City, Okla.

OIL LEASE—Large tract of land in Shackelford County, Texas, adjoining production. Address Box A-54, care The Oil and Gas Journal, Tulsa, Okla.

FOR SALE — Leases and royalties, Cumberland County, Kentucky. Prices from wildcat to close up and producing royalties. A. J. McDowell, Burkesville, Ky.

FOR SALE—20-acre 1-64 royalty, Bradley County, Arkansas. Well located and very cheap. Will take $1 per acre for quick sale. Camden Investment Co., Camden, Ark.

OFFER 7,000 ACRES solid block for test well; excellent geology; good title; northern part State of Tamaulipas, Mexico. Great opportunity. P. O. Box 957, Kansas City, Mo.

FOR SALE — Salt Creek leases and production, also producing black oil leases and structures to be tested. R. Kamon, 242 East Second, Casper, Wyo.

WEWOKA—Oklahoma's newest oil field; have high class or cheap leases and royalties for sale, in Seminole, Pottawatomie and Lincoln Counties. W. R. Turner, 2123 Warren Ave., Chicago, Ill.

OIL LEASES FOR SALE

3,040 acres, all in solid block, in proven territory, at $25 an acre; 3 to 6 miles southwest of Sterling, Okla.; in range 3n, 9 and 10 west. Call and see George Scheetz, Fletcher, Okla.

WANTED—100 men with $100 each to join me in drilling test well on my choice 8,000-acre lease on Marathon fold in Texas. Fred J. Quinn, San Angelo, Tex.

FOR SALE—Oil and gas properties in eastern Kentucky; 430 acres in proven territory, with three fully equipped wells and adequate pipe line facilities. Additional large amount of excellent prospective oil and gas acreage. Shallow drilling to Wier and Berea sands. Terms reasonable. Inquire A. R. Eyssell, 244 Bellefield Avenue, Pittsburgh, Pa.

LEASES—PRODUCTION

FOR SALE—At bargain prices, oil and gas leases, production and royalties in the Kentucky shallow fields. For full particulars and maps, address W. P. Harley, Bowling Green, Ky.

FREE BLOCK of acreage given on drilling contracts, Miami, Anderson and Linn Counties. For sale, proven acreage Coffey and Anderson Counties; 800 to 1,600-foot drilling; 41 gravity. H. W. Mitchell, Paola, Kans.

TEXAS OIL LEASES 10c an acre up to $10 an acre. Will sell tracts of 10 acres or more. Have 30,000 acres to choose from. All new five-year leases. Get full particulars. Gulf Realty Co., 1093 Bedell Bldg., San Antonio, Tex.

Production
Drilling Blocks
Leases and Royalties
Geological Value Given Preference
J. M. Allen
902 Petroleum Bldg., Tulsa, Okla.

OIL OPERATORS—Montgomery County, Mississippi, world's next big oil field; 3,000 acres leases for well. W. C. Brooks, 282 S. Front St., Memphis, Tenn.

5c AN ACRE CASH—Texas school lands for sale by the State at $2 per acre; 5 cents an acre cash, balance in 40 years, 5 per cent interest. Send 6 cents postage for further information. Investor Publishing Co., Desk 8, San Antonio, Texas.

TEXAS oil leases close to drilling wells in Luling Field, Guadalupe, Bexar, Webb and Medina Counties. Standard Form 88 five year leases. Much development taking place. Write for map and particulars. L. W. Stieren, 815 Alamo National Bank Building, San Antonio, Tex.

FOR SALE—Mineral rights on proven oil acreage. Coal land; oil leases in Fentress and Pickett Counties, Tennessee, and Cumberland County, Kentucky. All in shallow territory. Also want partner to help develop; or connection with party that can sell property; liberal commission. W. C. Smith, Jamestown, Tenn.

PRODUCERS, Refiners and others interested can secure protection acreage on one of the best anticlines in Montana. Recommended by U. S. G. S. and leading private geologists. Test well now drilling. Walter F. Brittan, Poplar, Mont.

SHEFFIELD TERRACE (Marathon Fold) and Balcones Fault leases. We have them for 10c an acre up in tracts of 10 acres or more. All new five-year leases. 30,000 acres to choose from. Get particulars. Gulf Realty Co., 1017 Bedell Bldg., San Antonio, Tex.

OIL LEASES

We have leases 20 to 50 miles from the new Luling Field in Texas from 10c an acre up to $1 an acre in tracts of 10 acres up to 10,000 acres. We have many other leases along Balcones Fault and Sheffield (Marathon Fold) Terrace. Here are a few of our leases:

Blanco County	10c an acre
Bandera County	30c an acre
Comal County	15c an acre
Hays County	20c an acre
Guadalupe County	$1 an acre
Kerr County	15c an acre
Medina County	40c an acre
Travis County	25c an acre
Zapata County	$1 an acre

We also have leases less than 1 mile from production at higher prices. All these leases are the standard form 88 5-year leases and all were bought direct by us from the land owner, which accounts for the extremely low prices. We have 30,000 acres on hand to take care of your orders. Don't send any money now; get particulars and maps first. No obligation.

GULF REALTY CO.
1022 Bedell Bldg. San Antonio, Tex.

LEASES—PRODUCTION

FOR SALE—110 acres unimproved; 16-15-13; all oil and gas rights; $15 an acre. Box 41, Okmulgee, Okla.

OIL AND GAS LEASE—East half, southwest quarter, 12-14-13; $12 per acre. Box 41, Okmulgee, Okla.

FOR SALE—Oil leases and royalties. New developing field; five wells going down; great activity. See or phone H. M. Godfrey, Crescent, Okla.

70-ARCE OIL LEASE for sale in Sections 17 and 20-20-14, Tulsa County. Address Carl Deickmann, Wagoner, Okla.

FREE LEASES—San Juan Basin, to developers. New Mexico's famous high gravity territory; 160 to 20,000 acres. Edward C. Hall, Sugar Land, Texas.

WILL GIVE blocks of acreage for drilling contract in Russell and Adair Counties; Kentucky's next big oil field. Box 288, Bowling Green, Ky.

OIL ROYALTIES for sale; Noble County; close to production and drilling well; would make good deal with party to syndicate. Address Box 66, Marland, Okla.

I HAVE 70 acres in Payne County, Oklahoma, for lease. The southeast quarter Section 6, Township 17n, Range 1 east of the Indian Meridian. Address, Annie Richardson, Route No. 1, Box 2, Coyle, Okla.

MISSOURI—For Sale. We own several farms, 40 acres up to 320 acres; will sell to actual settlers at low prices and on terms most anyone can handle. Best time to start in farming, while everything is cheap. Lock Box 172, Butler, Mo.

10c AN ACRE and up for leases in Guadalupe, Blanco, Medina, Zapata and many other counties. Will sell 10 acres or more. All new five year leases. Get particulars. Gulf Realty Co., 1014 Bedell Bldg., San Antonio, Tex.

I HAVE wildcat acreage for sale in vicinity of well located by the same geologist who discovered the Sayre oil field and recommended by him to be as safe an investment as the Sayre Field. I can sell for $2 per acre and up. Dr. W. R. German, Canadian, Tex.

75c PER ACRE for 1,000 or 5,000 acres in the Panhandle of Texas on surveyed structure. Well drilling to prove this territory. No rental due till 1926. A snap for someone. If interested, write and will forward printed geologist's report and map. 300 Alworth Bldg., Duluth, Minn.

ORCHARD; bearing; 6,500 apples; 500 cherries, 200 pears, 100 peaches; fully equipped; tractor, sprayer, teams, five-room house; 5 miles college town, 100 miles St. Louis; crop this year about 23,000 bushels; terms or some exchange. Buehner, Box 157-A, Neosho, Mo.

I AM offering two undivided 5-acre tracts in royalty and east half of the northwest quarter, Section 25-6-6, Seminole County, offset to gas well; if taken soon, at $1,000 each.

Also other lands, leases and royalties for sale in Seminole, Pottawatomie, and Pontotoc Counties, Oklahoma. I. H. Townsend, Kanawa, Okla.

640 ACRES of land right on highway in Polk County, Arkansas; there is about 75 acres cleared; balance in timber; nearly enough to pay for it; there is a fine stream running through it and it is one of the most beautiful spots on the Kansas City Southern Railroad; this can be made the show place of Arkansas on account of the fine location and fine springs and beautiful lay of the land for a resort or show place; and one of the greatest bargains offered at the price of $10 per acre; no trades considered at this price. Address W. A. Ragland, Mena, Ark.

LEASES—PRODUCTION

WILL GIVE 100 acres for the drilling of one well. This is close to production. Box 489, Bowling Green, Ky.

OIL LEASE—Well drilling; send for map; full details. Lock Box 448, Sterling, Kans.

FEE AND HALF ROYALTY—West half, southeast quarter, 1-8-8. Box 41, Okmulgee, Okla.

NEED MONEY and must sell lease of 60 acres; 4 bbls. settled production; Warren County, Kentucky. For particulars, write Box 508, Bowling Green, Ky.

6,000 ACRES—Solid block; well drilling now; showing oil; high grade; joins block. F. Purdy, Lock Box 448, Sterling, Kans.

FOR SALE—80 acres; three wells; 5 barrels production; all proven; five wells shallow, offsetting deep well now drilling. Powers, engines, tanks, casing and well equipment. J. S. Danneck, Paola, Kans.

LEASES AND ROYALTIES—Pottawatomie, Lincoln, Seminole, Pontotoc and McClain Counties. Maps of Pottawatomie showing acreage leased. Paper, $3.50; cloth, $5; postpaid. B. H. Rowlett & Co., Tecumseh, Okla.

FOR SALE—Leasd of 40 acres; three wells making 5½ barrels; lease fully equipped and connected with pipe line; Warren County, Kentucky. Box 365, Bowling Green, Ky.

FOR SALE CHEAP—60-acre lease adjoining shallow production, Section 9, Township 21n, Rogers County, Oklahoma. Make offer. Address, Box A-47, care The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—Royalty interest in the From Pool, west of Madison, on west half of northeast quarter of Section 13-22-11; there are real production and eight good producing wells in this field. W. J. Honeyman, Madison, Kans.

TEXAS OIL LEASES, 10 cents an acre up to $10 an acre. Will sell tracts of 10 acres or more. Have 30,000 acres to choose from. All new five-year leases. Get full particulars. Gulf Realty Co. 275 Bedell Building, San Antonio, Texas.

METCALF COUNTY OIL LEASES

I own several very desirable leases near production, shallow drilling, 220 to 400 feet; production 5 to 20 barrels daily; 45 to 51 gravity oil, which I offer to the right parties on very easy terms. A. W. Richards, Edmonton, Ky.

PRODUCING LEASE

Woodson County, Kansas; west 120 acres of southwest quarter, 34-23-16, proven field; 3 wells; pump house; full equipment; private sale to highest bidder. Sealed bids opened March 10. Full details; address owner. Box 206, Topeka, Kans.

GUADALUPE COUNTY LEASES
$2.50 an Acre

Leases between Seguin and the Chalo River in Guadalupe County, where 12 of the largest producing oil companies in the United States hold leases, and real close to where tests are soon to start can be had today for $2.50 an acre.

We have other leases in many counties from 10 cents an acre up. Here are a few of them:

Blanco County ..	10c an acre
Medina County ..	50c an acre
Zapata County ..	$1.25 an acre
Pecos County	40c an acre
Bandera County ..	40c an acre

Numerous other counties.

All of the leases we advertise are actually on hand, are owned by us, and purchased direct from the land owners by our own representatives. We offer no one elses' lease for sale. If you want a chance on your investment, here it is. Write for maps and other particulars. No obligation.

GULF REALTY COMPANY
276 Bedell Bldg. San Antonio, Texas

25 CENTS per line first insertion; 15c per line each additional insertion. Cash in advance.

CLASSIFIED WANTS

COPY must be in our office Friday prior to date of issue. Average 6 words to the line. Cash in advance

LEASES—PRODUCTION

FOR SALE—Oil and gas leases on 120 acres in 21-10-6, Seminole County, at $4 per acre. Okmulgee Securities Co., Okmulgee, Okla.

PRODUCTION FOR SALE—220 barrels daily; 40 locations available; net earnings 35 per cent; price $200,000. Address, G. Lucas, 617 Edwards Street, Shreveport, La.

KENTUCKY oil and gas leases for sale near production; drilling wells and on good structure. Write me for map and description. F. L. James, Box 194, Fdrenton, Ky.

MONTANA—Toole County leases, 140 producing wells in this county. Shallow drilling; 40-acre leases near production, $10 per acre; also proven acreage. A. W. Beeston, Shelby, Mont.

MUST SELL—Part of a new 370-acre oil lease to settle partnership; located just across the State line in Oklahoma, next section from new wells; 600 barrels of the Red Bank Co., near Coffeyville, Kans. P. O. Box 11, Nowata, Okla., Phone 765. Business is good here.

30,000 ACRES leases, blocked 95 per cent solid in central part of Monroe County, Alabama. Geological report favorable for presence of gas and petroleum. Would be glad to hear from anyone interested in development of a wildcat proposition of this kind. G. L. Vattier, Tunnel Springs, Ala.

WILL SELL lease on my oil lands in Section 4, Township 17, Range 15, in oil section of Arkansas to someone who will drill immediately. One hundred and fifty acres; good wells near; deep sand and highest specific gravity found in the State. Address Mrs. M. J. Tucker, 1101 15th St. N. W. Washington, D. C.

FOR SALE—8,000 acres of cut over lands in Cleburne and Van Buren Counties, Arkansas. Much of this property has improvements on it. No oil or mineral lease ever been given. Fine section for truck, vegetables, fruit; good water. In foothills of Ozark Mountains. Price, $3 per acre. Claude Jones, Heber Springs, Ark.

PRODUCTION—Will sell oil and gas production; two oil wells making over 25 bbls. of 49 gravity oil, and gas well making nearly 3,000,000 feet, on lease of over 1,000 acres direct on railroad, in Roane County, West Virginia, with full supply of casing, pipe lines, rigs and engines; property has pipe line connections and offers great possibilities; will sell at bargain price. If interested telegraph me of your arrival for inspection and investigation of this property. C. Lewis Wilson, Oil and Gas Broker, Parkersburg, W. Va.

WANTED—REFINERIES

IN THE MARKET for small refinery. Give full particulars in letter. Address 20 Lindero Avenue, Long Beach, Cal.

WANTED—To lease or buy small, well equipped gasoline refinery, in first class condition. Must be well located with good supply of crude available. Address Box A-60, care The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—REFINERIES

OIL REFINERY for sale. Address, J. I. Jones, Trustee in Bankruptcy, Box 1095, Great Falls, Mont.

REFINERY—Capacity 800 barrels of oil and 3,000,000 feet casinghead gas; now operating under receivership; can be bought for one-third of cost of construction. Graham Insurance Agency, Graham, Texas.

FOR SALE—EQUIPMENT

FOR SALE—Good second hand Star rig; steam; with all necessary tools for 600-foot wells. Address 8550 Brandon Avenue, Chicago, Ill.

FOR SALE—EQUIPMENT

FOR SALE—Pine and oak rig timbers; all sizes and lengths. Service and quality. W. T. White, Shreveport, La.

OIL FIELDS—Oil field machine and forge shop. Priced very low; shop complete, $4,000. The U. S. Tool & Supply Co., Steubenville, Ohio.

FOR SALE—12-18 Sheppard lathe; one No. 16 Leidecker; one 24 Star tractor; one 23 Star tractor. J. S. Danneck, Paola, Kans.

FOR SALE—All sizes used casing and line pipe, A-1 condition. Wire or write for prices. Breckenridge Salvage & Supply Co., Box 1742, Breckenridge, Texas.

FOR SALE—Used casing and line pipe in A-1 condition, all sizes. Write or wire for prices. Cisco Pipe & Supply Co., Cisco, Tex.

FOR SALE—A 2-inch double coil for a refinery; 18 feet long, in first class condition; and as good as new. Address Box A-75, care The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—One No. 28 Star; fair condition; and set of tools, with 30-h. p. boiler; 3 miles from K. C. S. Railway, at Potter, Ark. $1,500. L. A. Longino, Magnolia, Ark.

FOR SALE—23 Star Drilling Machine in good condition and complete set of tools; will sell very reasonable for cash. J. H. Brocksmith, 1856 Menard St., St. Louis, Mo.

THE WESTERMAN STUFFING Box does not pack with rubber rings and will give long, continuous service without attention. If your supply dealer hasn't them, send your order direct to The Dragon Mfg. Co., Marietta, Ohio.

BRAND NEW Pipe Tools, original cases, for 9-inch, 10-inch and 12-inch pipe; 3 Toledo pipe threaders No. 4, each, $185; also 4 Barnes No. 7 pipe cutters, each, $15. Prices are f. o. b. cars, New York. Allen Ashley, 152 W. Forty-Second St., New York.

FOR SALE—20, 30, 40, 45, 60, 65, 80, 125-h. p. Bessemer gas engines, 35 and 80-h. p.; Bessemer direct drive compressor; other engines up to 350-h. p. Some with generator. Complete electric plants. R. W. Russell, St. Marys, W. Va.

PIPE BARGAINS
150,000 feet 2½-in. pipe, 8c
50,000 feet 2 -in. pipe, 8c
20,000 feet 3 -in. pipe, 14c
Other sizes proportionate prices. Complete stock Rotary drilling rigs, boilers, engines, pumps, etc. Texas Supply Co., 2016 Loraine St., Houston, Tex.

25,000-BARREL TANK
400-barrel agitator; two 400-barrel stills, condensor boxes; four 100-h. p. boilers; large quantity of 2, 3 4 and 6-inch fittings, all in A-1 condition; priced at a bargain. Call or write F. A. Sanders, 420 Mayo Bldg., Tulsa, Okla.; phone Osage 7037, or Jennings, Okla., phone 98.

FOR SALE—3,000 feet 3-inch 8-lb. National Upset drill pipe; 900 feet 2½-inch, 8-lb. National Upset drill pipe; 65 3-inch W. K. M. tool joints; 35 4-inch tool joints; 14 6-inch tool joints; 1 5⅞-inch Hughes Rock Bit, and other rotary supplies used in making one hole. Priced to sell f. o. b. Bloomington, Texas. For complete list and prices, address, H. W. Dodd, Victoria, Texas, or the Dodd Company, 501 Mayo Bldg., Tulsa, Okla.

FARMELECTRIC—The Ford parts plant. The light plant that the oil men have been looking for; every wearing part interchangeable with Ford engine. Repairs at any Ford garage or country store. Will run 365 days in the year if necessary. For price and terms write Charles S. Brown, State Distributor, 21 North Dewey Street, Oklahoma City, Okla.

FOR SALE—EQUIPMENT

FOR SALE—A profitable second-hand pipe yard, also supplies and machinery. One of the best locations in the United States. Good for $40,000 or more a year profit. Address, Box A-76, care The Oil and Gas Journal, Tulsa, Okla.

USED MACHINERY—20, 50, 110, and 150-h. p. Bessemers; 35-h. p. Chicago Pneumatic; 65, 100 and 125-h. p. Millers; 401-foot Chicago Gas-driven Air Compressor, 100-lb. working pressure, Boilers, Steam Engines, Pumps, Air Compressors, Air Drills, Crushers, Rolls, etc. Ask for our used machinery stock sheet. Landreth Machinery Co., Joplin, Mo.

PIPE, VALVES AND FITTINGS
Due to our large stock on hand, in pipe, valves and fittings, standard and extra heavy, flanged and screwed, from ⅛-inch to 24-inch diameter, we are offering attractive prices for immediate shipment. Pipe cut and fabricated to specifications. Arrangements for extended credit can be made. Commonwealth Pipe & Supply Co., Inc., District Sales Dept., P. O. Box 5081, Boston, Mass.

FOR SALE—PETS

REGISTERED Bull Pups—Bulldog Park, 501 Rockwood, Dallas, Texas.

REGISTERED Pointer and Setter bitch; bred; $100; all papers on pups. Shelby Kennel, Bartlett, Tenn.

PATENTS

OPPORTUNITY now open for reliable equipment or tool manufacturer to secure manufacturing and sales rights for most needed invention of oil industry. Tested, approved and thoroughly protected by United States and foreign patents. Royalty basis. Box 316, Wheeling, W. Va.

WANTED

WANTED—Offer for 100 shares Model Gasoline Co. Address Box A-41, care The Oil and Gas Journal, Tulsa, Okla.

WANTED to buy good oil field tool and machine shop outfit; also pipe machine up to 15-inch. Address Box 712, Winfield, Kans.

WANTED—Partner with $5,000 to develop oil proposition from which, in my opinion, good returns may be secured. R. G. Ferguson, Moran, Texas.

WANTED—Proven acreage in shallow field. Give full particulars and price. Address 20 Lindero Avenue, Long Beach, Cal.

WANTED—A reliable party to help finance the drilling of well on excellent structure, with good geology. Address, Operator, P. O. Box 955, Tulsa, Okla.

WANTED—Complete string heavy used Standard tools. Must be priced right and in perfect condition. Omar Drilling Syndicate, 617 Exchange Bldg., Denver, Colo.

CAPITAL ENLISTED
WANTED—An issue of securities to float in the East by reliable concern, on commission. Address Brokers, U. S. Realty Bldg., Suite 512, New York City.

WANTED—Drilling blocks in Oklahoma and Kansas; also acreage near drilling wells on structure. Address Box A-63, care The Oil and Gas Journal, Tulsa, Okla.

WANTED RELIABLE BROKER to handle high class block of stock in operating company with good future. Strong board of directors insures success; no cash or stock advances made; if you are in this class save our time and yours. Results and square dealing desired and assured; highest references; liberal commissions granted. Communicate with Keystone Refineries, 2946 Terrace Street, Kansas City, Mo.

WANTED

EXPERIENCED oil jobber would like to hear from refiner or someone with capital to join in establishing bulk stations in Iowa. Address P. O. Box 227, Des Moines, Iowa.

WANTED—By a mining company, four oil or convertible gas engines, total 600-h. p., also a 1,500-foot air compressor, must be in good condition and priced right. Give details. P. O. Box 2073, Tulsa, Okla.

WANTED—From owner direct, good block of acreage, on structure, in Seminole, Pottawatomie, Lincoln or Hughes Counties. Must have good geology. Address Box A-62, care The Oil and Gas Journal, Tulsa, Okla.

WANTED—To contract for gasoline rights of dry or casinghead gas to build gasoline plants. Also interested in the purchase of present gasoline plants, preferably in the East. Address Box XXX, care The Oil and Gas Journal, Tulsa, Okla.

WANTED—Direct from owners, producing oil property in Kentucky, to operate on a percentage basis, property that owners are away or unable to give the proper care. Give full particulars first letter. Address Box A-30, care The Oil and Gas Journal, Tulsa, Okla.

WANTED—Good blocks of acreage in Eastern Texas, southern Arkansas, and Oklahoma for drilling contracts. Submit full details and best proposition in first letter. If not interested, all data will be returned. Box 804, El Dorado, Ark.

WANTED—Drilling contract on my ranch near San Antonio, Texas; good structure and other signs favorable; would lend assistance for investigation and blocking up more land free. Ganahl Walker, R. F. D. No. 2, San Antonio, Texas.

MAE L. RUSSELL, 1930 Lemon St., South Pasadena, Cal., desires the address of her brother, William Lee Russell. Mr. Russell has worked in the Texas, Oklahoma, and Old Mexico oil fields. He was last heard from in Ranger, Texas, January 28, 1920. It is very necessary that Miss Russell get in touch with her brother. Anyone knowing the whereabouts of Mr. Russell will confer a favor by notifying Miss Russell.

WANTED—Competent and relable oil men to make offer to drill well on 500-acre (full ⅞) lease, located southwest Smackover, Arkansas oil field, near pipe line running from Louan, Ark. to Haynesville, Louisiana. Worthy of inspection. Nacadosia oil sand should be encountered at about 2,040 feet. This territory supposed to have three sands. Write for details to DeLere, 1420 Pratt Boulevard, Chicago, Ill.

HELP WANTED

OIL DEALERS AND JOBBERS—Large corporation manufacturing most efficient oil burner on the market desires dealers, distributors, and special agents everywhere. Develop big distillate business in your territory with "Sun" burner. Write today for attractive offer. Dept. 7, Heating Equipment Corp., Lincoln, Nebr.

CORPORATION manufacturing well known make of Water Cooling Tower, desires to make arrangements with engineering representative familiar with oil plants using the cracking process, or casinghead process where water cooling towers are required, to intensively cover the available territory on a salary, or salary and commission basis. Reply giving full details as to qualifications, etc. Box L. C., care The Oil and Gas Journal, 30 Church St., New York City.

POSITION WANTED

ENGINEER—Ice, light, refrigeration, maintenance, tools. Over 25 years experience. Box 364, Okmulgee, Okla.

25 CENTS per line first insertion; 15c per line each additional insertion. Cash in advance.

CLASSIFIED WANTS

COPY must be in our office Friday prior to date of issue. Average 6 words to the line. Cash in advance

POSITION WANTED

MINING ENGINEER—25 years' experience; 10 years in Mexico, 5 years in South America; conversant with geology of oil; open for engagement; address E. Dargin, Hotel Sylvania, Denver, Colo.

TEN YEARS' practical experience as refiner and marketer; familiar with both crude oil and absorption plants. Desire connection with responsible concern. Address, Box 108, Mineral Wells, Texas.

REFINERY MAN with 10 years practical experience in light oils is anxious to connect with reliable concern. Address Box A-61, care The Oil and Gas Journal, Tulsa, Okla.

WANTED—A position as boarding house manager in good camp in the oil field by a competent middle-aged lady. Eight years' experience; references. Address Box A-73, care The Oil and Gas Journal, Tulsa, Okla.

THOROUGHLY experienced pipe lineman. Can plan, install and operate any kind of pumping machinery. Will show efficiency and economy. Some experience as superintendent. Employed; desire change; excellent references. Address Box A-40, care The Oil and Gas Journal, Tulsa, Okla.

GRADUATE CHEMIST, B. S., M. S., desires position with reliable oil company. Three years' research work dealing with hydrocarbon chemistry. Now employed but available upon short notice. Address, Box A-71, care The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED by experienced oil accountant, office manager, capable of installing a complete information-giving, money-saving system that will not conflict with any system you are now using. Address, Oil Accountant, 5418 Richmond Street, Dallas, Texas.

EXECUTIVE—Manufacture and sales 12 years experience; Standard and large corporations; familiar pressure distillation. Desirous effecting connection where efforts and results will earn more than just salary. Address Executive, care The Oil and Gas Journal, Tulsa, Okla.

CARBON BLACK superintendent desires connection with responsible party West. Experienced in construction plants and producing different grades of black. At present in charge of operation East. High-class references. Address Box A-3, care The Oil and Gas Journal, Tulsa, Okla.

A COMPETENT and experienced oil man in field department; superintendent one of the largest producing companies in Wyoming four years; wishes similar connection with reliable company any place. Best references furnished on request. Address F. C. Lydon, Box 1236, Cheyenne, Wyo.

FIELD MANAGER, who has had several years' experience in charge of production and drilling for large companies in the Mid-Continent and Wyoming fields, is open for a position of responsibility. Am a graduate engineer and possess references of highest character. My experience, which has been very thorough and extensive as an executive and field manager, qualifies me to handle the operations of a private individual or the work of district superintendent. If you are in need of a man who has developed character and initiative, please address Box 803, care The Oil and Gas Journal, Tulsa, Okla.

BUSINESS OPPORTUNITY

IF INTERESTED in making an investment in oil, write Camden Investment Co., Box 171, Camden, Ark.

CAPITAL SEEKERS—Put your project before 470 Canadian brokers and bank managers; cost trifling, under my plan. Details free. Amster Leonard, First National Bank Bldg., Chicago, Ill.

BUSINESS OPPORTUNITY

WILL SELL my 49 per cent stock interest in Kansas corporation operating four filling stations and conducting valuable marketing business. Dunn's rating. Invite the closest investigation. Owner, P. O. Box 502, Independence, Kans.

VIRGIN Kentucky Turtleback Oil Dome; geological map furnished. I make surveys, mapping structures and faults; if any showing, where and whether to drill. James Irwin, 122 East Ninth St., Cincinnati, Ohio.

STRONG CORPORATION will open negotiations with view of taking over company whose holdings will stand investigation as to value. Replies will be treated confidential. Address Engineering Department, 633 Fisk Bldg., New York City.

PRACTICAL OIL MAN wants partner with $5,000 to handle proposition, potentially the biggest thing in oil producing business. Not a one-well proposition, but continuing, permanent business. Address, A-72, care The Oil and Gas Journal, Tulsa, Okla.

WE HAVE place for several honest, energetic men to join in reorganizing incorporated oil company and begin quick action; several thousand acres good land and two good drillers available; all preliminaries worked out. Don't wait. The reaction has begun and independence awaits us. Address Box 356, Dennison, Texas.

COMMON LAW COMPANIES — Organize under Declaration of Trust; many advantages; legal everywhere; managed by trustees; limited liability. No State organization fees, reports or franchise tax. Meet or do business anywhere. Better than a corporation or partnership. Booklet free. Modern Organization Co., 304 South Broadway, Los Angeles, Calif.

NOTICE OF SALE

Complying with an order of the United States Federal Court, the Union Oil Co. of Wichita, Kans., will be sold at public sale on February 4, 1924, at 2 p. m., at the east door of the Federal Building, Wichita, Kans. Particulars may be had by addressing the Special Master, Charles H. Smyth, 511 Beacon Building, Wichita, Kans.

GEOLOGICAL ENGINEER, 12 years' experience examinations, reports, appraisals, management, oil properties, seeks a new engagement or proposition either with an oil company or with a banking or brokerage house interested in financing or specializing in oil. Principals only. Write Box A-12, The Oil and Gas Journal, Tulsa, Okla.

INVESTMENTS

We have a proposition in real estate that in our opinion will pay 100 per cent. The investment requires $20,000 and would carry with it a position of trust, if satisfactory. The proposition has been approved by the president of one of the leading banks of the city. This statement sounds like a dream, but investigation will make a believer of you.

Parrish & Harrell
18 West Main Oklahoma City, Okla.

I AM STARTING a well on excellent anticline mapped out by the United States Geological Survey in northwest part of Township 16, Range 20, about 15 miles northeast of this place and about 3 miles from the oil wells east of Okay; and have machine now located on crest of the anticline. Want 20 other parties to join me in this, on ground floor. Excellent prospects for big production. One-thirty-second interest in 80-acre lease, with the well to be drilled, and separate lease on 10 acres of nearby acreage for each interest, for only $100, payable $25 monthly. Fine marketing facilities for either oil or gas. Bank references furnished, if desired. J. L. Haner, 105 McKibbon Building, Muskogee, Okla.

BUSINESS OPPORTUNITY

INTERNATIONAL financing; want right now high-grade bond or stock issue. Box 471, Oklahoma City, Okla.

SHAWNEE, OKLA.—A growing city, fast developing as an oil center. For information, write Board of Commerce, Shawnee, Okla.

REFINING or distributing company wishing catchy name for oil and gasoline. Address Box A170, care The Oil and Gas Journal, Tulsa, Okla.

NEW MEXICO shallow drilling contract; 10,000 acres solid block; State lease; Roosevelt County. Report indicates oil should be found around 1,000 feet. Will give said block for test or will give block with completed well to said depth for $8,000. Contract let for test joining this block. W. R. Smith, Room 454, 29 South LaSalle Street, Chicago, Ill.

CAPITAL RAISING — Compaigns planned, written, printed — everything complete ready to mail to investors. Twenty years' experience handling investment advertising. Clients all over America. Big, illustrated book, "How to Raise Capital" free if you submit detailed outline of your proposition. Ernest F. Gardner, L-511 Ridge Arcade, Kansas City, Mo.

FOR SALE—Or will give lease for drilling or stock in a company in a shallow field in Kentucky, 25 feet of oil sand at 580 feet; two wells standing in high grade oil; in Mead County, east of Owensboro Field, about 50 miles from Louisville. Both sides of the L. H. St. L. Railway. The maximum pipe line not over 5 miles and an average of 2. Geologist report by H. M. Crump, Geologist, Bowling Green, Ky. Address, Albert Adams, 4044 Shenandoah, St. Louis, Mo.

PARTY with few thousand dollars can secure substantial interest in safe going oil leasing company; profits large and safe as life insurance; investigate. Manley, 313 Herskowitz Building, Oklahoma City, Oklahoma.

COMMERCIAL LANGUAGES

LEARN to speak Spanish. A valuable asset to any oil man. Commercial and literary classes, day or evening. Interpreting of Spanish letters a specialty. Messenger School of Spanish, 241 Robinson Bldg., Tulsa, Okla.

LETTERHEADS—PRINTING

OIL FIELD LEGAL BLANKS—Leases, assignments, releases, township plats, gauge books, run tickets, time books, well records, etc. Request on your letterhead gets free catalogue. Oil Press, 215 East Third St., Tulsa, Okla.

MAILING LISTS

GUARANTEED Mailing Lists (or calling lists) of oil company purchasing agents and superintendents throughout entire Mid-Continent Field. Oil Industry Register, 306 Palace Building, P. O. Box 1742, Tulsa, Okla.

WELL LOGS

WELL LOGS — Logs of practically every well drilled in Amarillo district, also Beckham County. Postpaid, $6 per dozen; assorted. Rubie Vaughan, Shamrock, Tex.

INCORPORATIONS

DELAWARE incorporator. Charters; fees small; forms. Charles G. Guyer, 901 Orange St., Wilmington, Del.

TOO LATE TO CLASSIFY

FOR SALE—A Star drilling machine; tools complete; can be seen at location. Address, Box A-77, care The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—Choice one-half royalties close to drilling structure, in Eastern Texas. Every indication for success very favorable. Also have lease and royalties in Panola, Shelby, Rusk and Nacogdoches Counties, Texas. Will furnish large tracts for development. Address, R. L. Day, Timpson, Texas.

FEW NEW OPERATIONS IN ROCKY MOUNTAINS

(Continued from Page 176)

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas	Abd.
Wells	6	60	1	0	41
Blackford	0	0	0	0	17
Jay	69	2,951	10	1	25
Adams	8	133	1	0	30
Grant	3	22	0	0	5
Huntington	2	110	0	0	0
Delaware	3	60	2	0	14
Raldolph	5	146	0	0	2
Gibson	28	429	14	0	16
Pike	26	393	6	1	16
Sullivan	14	8	10	1	6
Wabash	1	10	0	0	0
Knox	6	90	1	1	0
Wayne	1	0	1	0	0
Warrick	1	0	1	0	0
Vigo	2	0	2	0	0
Greene	1	0	1	0	0
Total	175	4,411	49	4	177

Illinois in 1923

During the year 1923 the completed wells in the Illinois fields were as follows:

Month—	Comp.	Prod.	Dry	Gas	Abd.
January	27	740	13	1	2
February	23	672	9	0	0
March	14	730	2	0	4
April	24	978	9	0	10
May	31	414	9	1	6
June	37	254	17	0	5
July	23	311	5	5	1
August	26	340	8	3	1
September	16	194	9	2	2
October	11	74	6	0	0
November	12	149	2	5	2
December	16	158	5	1	3
Total 1923	260	5,014	94	18	36
Total 1922	341	5,929	87	2	71
Difference	121	905	7	16	35

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas	Abd.
Clark	44	1,600	9	2	0
Cumberland	3	0	3	0	0
Crawford	45	156	16	2	1
Lawrence	25	607	4	0	10
Marion	22	593	9	0	12
Clinton	6	55	4	0	1
Monroe	12	57	2	0	1
Wabash	48	1,599	22	0	1
Jasper	2	0	2	0	1
Jackson	29	252	11	7	1
Washington	2	0	2	0	1
Jefferson	1	0	1	0	1
Macon	2	2	1	0	1
Edwards	1	0	1	0	1
Edgar	1	0	1	0	1
Henderson	2	0	2	0	1
Morgan	5	0	1	0	1
Douglass	1	0	1	0	1
Randolph	2	75	0	0	1
Perry	1	5	0	0	1
Macoupin	4	13	0	2	1
Bond	1	0	1	0	1
Fayette	1	0	1	0	1
Total	280	5,014	94	18	36

SHIP FUEL CONTRACT HELD BY BRITISH-MEX

NEW YORK, Jan. 26.—"We are still supplying the bulk of the oil for the Cunard Co.," said Sir James T. Currie, a director of British Mexican Petroleum Co., which arrived on the Aquitania to look over the oil situation in this country. "Only a small part of the fuel oil contract was lost to Royal Dutch. We are supplying oil for the White Star Line and, you might say, practically all the Transatlantic steamship companies. We do not expect any long interruption in shipments of oil from Mexico, and do not regard the situation there as serious.

"The outlook for oil in Europe is very good. Consumption in increasing. From present indications oil is going to advance."

Osage Lease Auction For 100,000 Acres On March 18 and 19

WASHINGTON, D. C., Jan. 26.—Secretary Work today authorized an auction sale of oil leases covering lands belonging to the Osage Indians in Oklahoma. About 100,000 acres are being offered in tracts of 160 acres each, and the sale will be held on March 18 and 19, respectively. Under existing law approximately 100,000 acres must be offered for sale annually prior to April 8. On account of the depression in the oil industry in Oklahoma no sale has been held since April, 1923, and it is therefore necessary to offer the entire acreage at one time.

N. W. PENNSYLVANIA MARKET TREND UPWARD

OIL CITY, Pa., Jan. 28.—The upward trend of the northwestern Pennsylvania refined market continued during the week. It was assisted by the increases in the prices of eastern grades of crude oil. For some time now the price trend of the local refined market has been distinctly upward. There have been days that there have been temporary softenings but the market always rallied the next day and more than made up the loss.

The weakest points in the market are gasoline and kerosene and even in them the tendency is bullish. The cold and stormy weather of the past week cut down actual consumption of gasoline in this territory, but this is expected by the refiners and jobbers at this season.

All kinds of lubricants are extremely strong at present. They are scarce and the demand is good with the result that the prices are continually being advanced. Wax is also in the scarce class.

Say you saw it in The Oil and Gas Journal.

WESTERN BANK SUPPLY CO.
Manufacturing Stationers
High-Grade Office Furniture
Filing Cabinets—Safes
Log Books—Township Plats—All Standard Forms
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4th and Boston TULSA, OKLA.

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SAND SPRINGS WATER CO.
Pure Spring Water
Distilled
Phone Osage 700 Tulsa, Okla.

Place your order for Ice with the
TULSA ICE CO.
Phone 12, 4 N. Detroit, Tulsa, Okla.

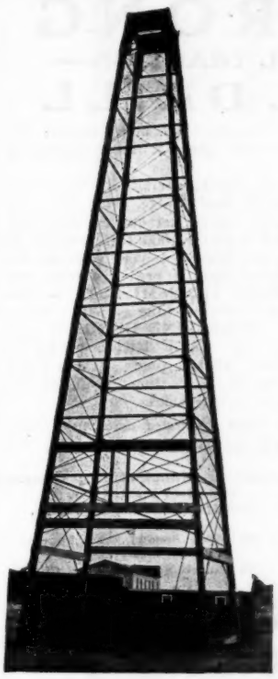
LAST MINUTE *from* OKLAHOMA

Three gushers in the 100-bbl.-an-hour class were the immediate results of lifting the shutdown agreement that retarded development in the Hewitt Field's deeper horizons for several months. The largest was the Carter Oil Co.'s No. 41 Noble, C NE SE NE, Section 21-4s-2w, which came in at the rate of 170 bbls. an hour in lime at 2,892-93 feet. The same company's No. 40 Noble, C SE NW NE, same section, which reached the lime at 3,053 feet early in the month and was shut in after producing 2,378 bbls. in 24 hours, was opened up and flowed at the rate of 105 bbls. an hour. It later declined to 90 bbls. an hour. The Carter's No. 20 Ward, C NE NW NE, Section 21-4s-2w, which was shut in last week, was also opened up, starting off at 150 bbls. an hour in sand at 3,075-3,106 feet, total depth being 3,110 feet. It also declined to 110 bbls. hourly. The same company's No. 19 Ward, C SE SW SE, Section 16-4s-2w, found lime at 3,090-3,110 feet and was swabbing 150 bbls. at total depth of 3,145 feet. The Wolverine Oil Co.'s No. 111 Dillard, NW cor. SW, Section 21-4s-2w, was still drilling itself in and had increased to 908 bbls. in 24 hours.

Late Burbank reports were as follows: The Gypsy Oil Co.'s No. 2 Cooper, NW cor. NE SE, Section 22-27-5, Osage County, which made 1,117 bbls. the first 15 hours in sand topped at 2,995-3,017 feet, was shot with 20 quarts in sand at 3,005-17 feet, increasing to 1,800 bbls. First oil was at 3,003 feet. The same company's No. 3, one location west, was good for 500 bbls. natural in sand at 2,997-3,021 feet, first oil being found at 3,002 feet. The same company's No. 5, SE cor. NE SE, same section, was also good for 500 bbls. in sand at 2,944-75 feet. The Phillips Petroleum Co.'s No. 1, SW cor. NE, Section 26-27-5, which found sand at 2,920-83 feet, and first oil at 2,924 feet, was shot with 150 quarts in sand at 2,923-80 feet and made 500 bbls. The Mid-Kansas Oil & Gas Co.'s No. 7, NE cor. SE, Section 15-27-5, got top of the sand at 3,015 feet, first oil at 3,036 feet, and total depth was 3,078 feet. After a 120-quart shot in sand at 3,024-17 feet it made 700 bbls. The same company's No. 10, SE cor. same section, was good for 1,100 bbls. from sand at 3,031-3,113 feet, with first oil at 3,072 feet. The Roxana Petroleum Corp.'s No. 2 Pappan, SE cor. NE, Section 4-27-5, Kay County, found top of the sand and 7,000,000 feet of gas at 2,853 feet; first oil at 2,879 feet; and at total depth of 2,911 feet was good for 500 bbls. natural. The Gypsy Oil Co.'s No. 4 Sands, SW cor. SE, Section 4-27-5, made 600 bbls. after a 40-quart shot in sand at 2,915-35 feet. The same company's No. 5 Sands, NE cor. SE, same section, produced 1,199 bbls. after a 40-quart shot in sand at 2,885-2,920 feet. The Sinclair Oil & Gas Co.'s No. 3, SW cor. NW NE, Section 15-27-5, Osage County, was a 500-bbl. producer from sand at 2,990-3,051 feet. First oil came at 2,996 feet. The same company's No. 5, SE cor. SW NE, same section, made 906 bbls. the first 16 hours after a 20-quart shot in sand at 3,024-44 feet. Top of sand was at 2,982 feet and first oil at 2,995 feet.

CHARCOAL GAS MOTOR FUEL?

An automobile propelled by gas generated from the combustion of charcoal was given what was pronounced a successful test at Lyons, France, in the presence of a large number of Government officials and technical experts. The machine traveled 60 miles on 33 pounds of charcoal costing 25 cents, or less than one-fourth the cost had gasoline been used. The charcoal gas is generated in a compartment built into the rear of the body of the car. The process is that of an Alsatian engineer named Imberl.



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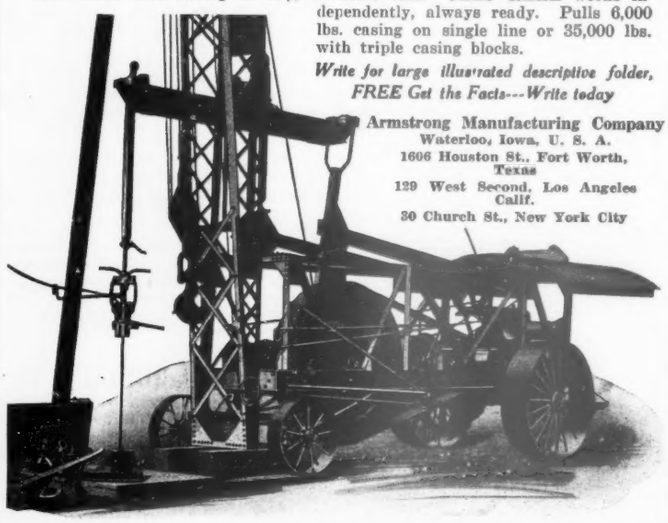

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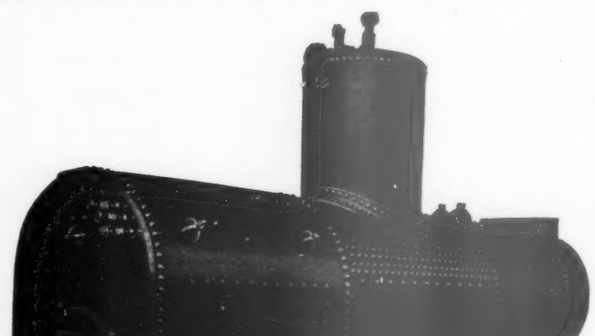

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NEW PROBLEMS ARE PRESENTED IN MANAGEMENT OF OIL PIPE LINES

By Hollis P. Porter

There never was a time in the history of the oil industry when the development of scientific economics made more rapid strides than at present. On every hand, from the producer to the refiner, there is evidence of more scientific application in methods employed in the management and conduct of the industry.

The refiner, with the application of scientific methods, has developed a multitude of refining processes so that he is becoming more and more able to meet the demands of the market. The cracking process, for example, increases gasoline output 100 per cent as compared with the standard methods of fractional distillation.

The production man has adopted the study of geology and is able to produce oil with a greater degree of assurance and with less uncertainty as to locations where he may expect to develop production.

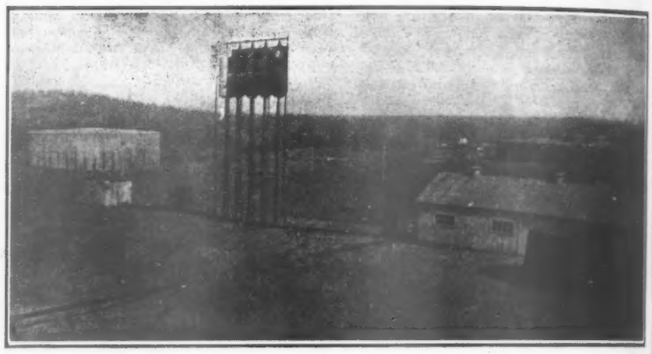
The dehydrating of emulsified oil at the well, the vapor tight tanks, and closed gathering systems all show a rapid trend of better and more scientific methods.

Determination of losses due to evaporation has recently brought about a realization that more improvement is needed in the methods to be employed in the storing and transportation of petroleum oils. Some improvement has been made along this line, but it yet remains for a pipe line company to transport oil from the field over a long distance without a great amount of loss due to evaporation.

Series of Tests

The writer has participated in a series of investigations conducted on a certain pipe line which carries oil from Oklahoma to the Gulf of Mexico. The data accumulated relates to only a portion of the system, beginning near Tulsa, Okla., and to a point near Lufkin, Tex., a distance of 334 miles and including eight pumping stations. It was found that during hot summer months the loss amounted to 3.9 per cent of the oil transported through the line. The A. P. I. gravity of the oil ranged between 37 and 39 degrees. The amount of oil being run from Oklahoma was 15,000 barrels a day. The daily loss was 585 barrels per day. The same series of tests showed that in winter weather the loss was somewhat less, the total accumulated loss being 1.4 per cent of the amount run, which on the same basis gives a daily loss of 210 barrels. Taking these two seasonable losses and averaging them, it may be shown that the average loss between the point where the pipe line received the oil in Oklahoma and where it delivered it in Texas was 397 barrels per day or 145,087 barrels per annum. These figures represent only evaporation losses and do not show losses which may have occurred due to leaks or breaks in the lines, neither does this show how much loss may have been sustained due to transporting oil received by the pipe line from other districts than Oklahoma. It is worthy of note that all this loss from petroleum is that fraction classed as gasoline, and its value is at least equal to the current price of gasoline and not the value of crude oil. A 42-gallon barrel of gasoline at 10 cents per gallon is worth $4.20, then millions of dollars in value must be lost annually from the pipe lines of the Mid-Continent fields through evaporation.

The problem then is to stop the evaporation losses in pipe line transportation, and there is every reason to believe that by the correct application of scientific methods this can be done. Perhaps it cannot be done perfectly without refinements in methods which would involve expense beyond commercial economy, but suppose 80 per cent of the loss can be stopped it should be perfectly practical to do at least this well. The answer is a closed system in which the oil will always be kept under a pressure which exceeds the vapor tension. This would involve many minor changes in methods now employed. Gauging in open tanks at each station must be discontinued. Rate of flow instruments might be used. "Overs" and "shorts" might be handled in pressure vessels or even in large tanks of gas-tight construction. Automatic gates might provide means of switching oil into and out of such vessels. In fact, modern science might be called on to care for a great many minor problems. There can be, and I predict there will be, great improvement made along this line in the near future. The producer is "passing the buck" to the pipe line when he confines the light fractions of the oil in his gas-tight tanks and it is fast becoming a problem for the pipe line management to so handle the oil that these lighter fractions will be delivered without loss to the refinery.



Experimental apparatus for determining pipe line losses from tanks where gauging is done

SOLD 3,000,000 USED CARS

ST. LOUIS, Mo., Jan. 28.—Statistics compiled by the National Automobile Dealers Association show that on December 15, 1923, there were 449,520 used cars in dealers' hands, as compared with 396,400 in 1922.

The average acquisition cost was $322, as against $353, while the total capital investment was $153,820,000, compared with $150,264,800. The average capital investment a dealer was $3,845, against $3,506, while the average number of cars a dealer in 1923 was 9.91, against 11.2.

The average selling price of a used car in 1923 was $308, according to the association, and during the year 3,091,46 used cars were sold. In 1922, dealers lost $123,000,000 handling used cars, the association reports, while in 1923 this was reduced to $57,347,000.

10,000-BBL WELL AT HULL DOME

HOUSTON, Tex., Jan. 29.—The Republic Production Co.'s No. 76 Delhi, on the east side of Hull Dome, is flowing 10,000 bbls. pipe line oil at 2,800 feet.

PETROLEUM STATISTICS COVERING 15 YEARS SHOW INTERESTING FACTS

By Walter M. Dunham

Field development statistics compiled from the records of the United States Geological Survey and The Oil and Gas Journal. Domestic production and value, consumption of domestic and imported petroleum importation of crude petroleum, compiled from the United States Geological Survey records, and the exports of petroleum and its refined products from the records of the Department of Foreign and Domestic Commerce. All barrels of 42 gallons capacity each.

Year—	Total Comp.	Total Dry	Total Nat. Gas Wells	Total Oil Wells	Total Init. New Prod.	Av. Init. Prod. per Well, bbls.
1909	18,227	3,404	1,048	13,875	525,567	37.73
1910	14,950	2,422	1,500	10,968	682,163	62.83
1911	13,768	2,363	1,580	9,825	747,220	76.05
1912	17,178	2,855	1,811	12,512	704,253	56.25
1913	25,590	4,282	2,207	19,101	889,914	46.59
Total	89,753	15,326	8,146	66,281	3,554,117	53.62

Calculating on a basis of an average of five acres to the well, this five-year drilling record represents the full and complete development of 448,765 acres, or 2,805 quarter sections of oil land.

1914	23,137	4,142	2,327	16,668	1,458,130	94.36
1915	14,157	2,981	2,022	9,154	1,779,391	194.28
1916	24,619	4,039	1,803	18,777	1,596,358	85.00
1917	23,407	4,851	1,966	16,590	1,482,938	89.38
1918	25,684	5,613	2,229	17,842	1,590,025	89.12
Total	111,004	21,626	10,347	79,031	7,906,842	100.04

The last five years represent a development of 555,020 acres, or 3,469 quarter sections. The 10 years, a development of 1,003,785 acres, or 6,274 quarter sections.

1919	29,173	5,986	2,135	21,052	3,529,118	167.64
1920	33,911	7,364	2,274	24,273	3,485,952	143.61
1921	21,937	5,160	2,111	14,666	2,851,498	194.43
1922	24,586	5,387	2,171	17,028	4,492,419	263.82
1923	24,397	5,955	2,323	16,119	5,920,106	367.27
Total	134,004	29,852	11,014	93,138	20,279,093	217.73

Domestic Production and Value

	Production	Value	Average Price Per Barrel
1909	183,171,000	$ 128,329,000	$0.704
1910	209,557,000	127,900,000	.610
1911	220,449,000	134,045,000	.608
1912	222,935,000	164,213,000	.737
1913	248,446,000	237,121,000	.954
Total	1,084,558,000	$ 791,608,000	$0.731
1914	265,763,000	$ 214,125,000	$0.806
1915	281,104,000	179,463,000	.638
1916	300,767,000	330,900,000	1.100
1917	335,316,000	522,635,000	1.559
1918	355,928,000	703,944,000	1.978
Total	1,538,878,000	$1,951,067,000	$1.268
1919	378,367,000	$ 760,266,000	$2.009
1920	442,929,000	1,360,745,000	3.072
1921	472,183,000	814,745,000	1.725
1922	557,531,000	894,837,255	1.605
1923	733,500,000		
Total	2,584,510,000		

Consumption, Imports, Exports and Value

	Consumption	Imports	Exports	Export Value
1909	167,089,000	69,614	37,359,604	$ 103,838,590
1910	191,483,000	557,181	35,773,617	94,107,022
1911	211,150,000	1,709,932	42,112,588	105,922,848
1912	240,188,000	7,383,229	44,844,759	124,210,382
1913	261,692,000	17,809,058	50,868,231	149,316,409
Total	1,071,602,000	27,529,014	210,958,799	$ 577,395,251
1914	261,293,000	17,247,483	53,864,135	$ 139,900,587
1915	290,772,000	18,140,110	55,445,851	142,941,669
1916	324,192,000	20,570,075	62,082,913	201,721,291
1917	378,317,000	30,126,682	63,121,865	262,977,476
1918	412,273,000	37,735,641	64,633,803	344,265,500
Total	1,666,847,000	123,819,992	299,148,567	$1,081,806,523
1919	420,462,000	52,321,567	59,351,287	$ 343,673,432
1920	530,532,000	106,175,289	74,972,509	549,366,212
1921	526,032,000	125,363,983	66,634,420	384,224,692
1922	592,442,000	127,308,000	*128,056,791	*647,517,665
1923	717,000,000	80,308,000	*170,078,842	*679,339,145
Total	2,786,468,000	491,976,839	499,093,849	$2,604,621,146

*Figures for 1922 and 1923 include refined products not previously exported.

ALL NOT PEACHES AND CREAM IN PALEMBANG

An interesting account of conditions existing in Sumatra is contained in the following letter received from Harry W. Rhinelander, of the Nederlandsche Koloniale Pet. Maj., who is located at Palembang, Sumatra:

"I have finally arrived at my destination after six weeks of traveling.

"We are located about 140 miles from the post office, which is in Palembang. After leaving Palembang we have to travel by boat one day and two nights and then ride (or walk if the roads are too muddy) about 40 miles out to the field.

"The day we came out here we had to walk 7 miles as the roads were so muddy that the trucks could not get through. They have three Ford trucks and two Dodge touring cars. They have 11 wells drilling and rigged up. It takes six weeks to build a rig and from 7 to 16 months to drill a well, the average depth being about 2,300 feet. Each man has a house to himself and two servants. Each driller has about seven collies on each well with him. When some of them start to drive a nail it takes them about a week to drive it. All the driller has to do is sit down and see that they do it.

"There are all kinds of animals here. While on the way out here we saw a cow that had been killed the night before by a tiger. There are monkeys here by the thousands. One of the new men and I are going about 4 miles from here to work on a new well, and we have been told that there are two elephants in that neighborhood and some tiger.

"We have a very nice camp here; the company is going to build a club house and tennis court, and are building a hotel now."

NEW OIL HIGHWAY

CASPER, Wyo., Jan. 26.—The highway through the Wind River Canyon has only a short distance of granite to be blasted to be open from one end to the other. The road should be ready by early spring. This is to be a great boon to the oil operators who now must travel Birdseye Pass over the mountains or go by train to reach the Big Horn Basin points. The Birdseye Pass route is always closed during the winter on account of heavy drifts and the high altitude. The new road through the canyon passes along the foot of great cliffs of granite that rise sheer for thousands of feet.

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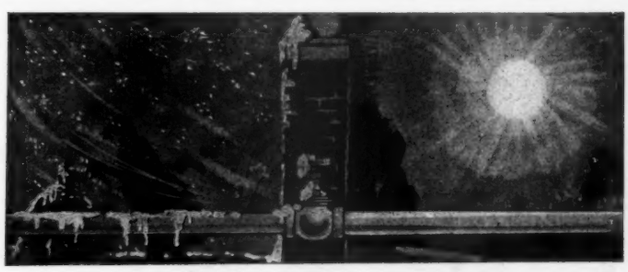

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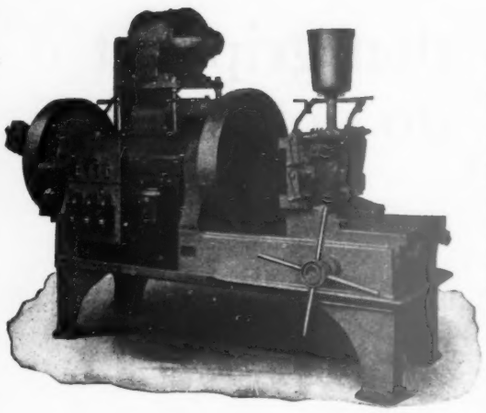

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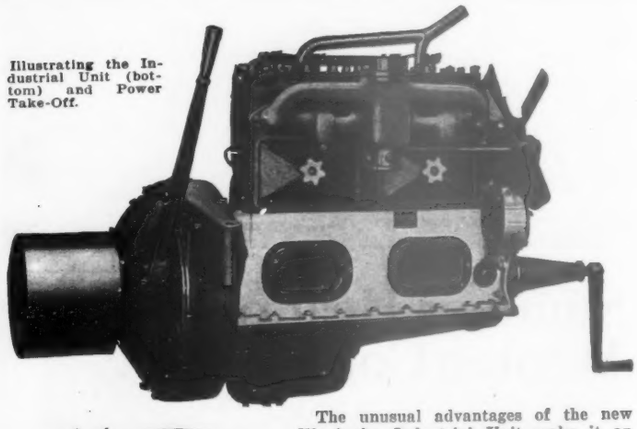
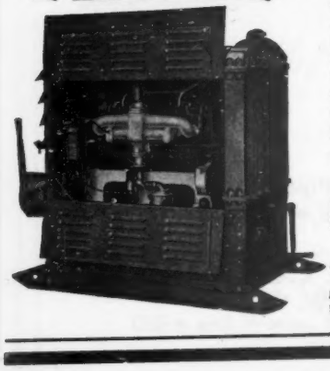


Illustrating the Industrial Unit (bottom) and Power Take-Off.

Waukesha
TRADE MARK



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With a power that is always constant and dependable, it operates your machinery quicker and more economically. And week by week, month after month, it keeps your machinery at capacity operation, thus enabling you to get the fullest productive value from that machinery at an operating cost that stays consistently low.

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AUTOMATIC TEMPERATURE CONTROL IN INDUSTRIAL HEATING PROCESSES

By H. M. Candee
(*Engineering Dept., The Bristol Co.*)

Automatic temperature control applied to industrial heating processes of today is the text for this article. The ideas given here are the result of direct contact with a great many heating operations under actual manufacturing conditions.

The fundamental principles affecting the application of heat are fixed, but there is an untold variety in method of applying these principles on account of the great variety of processes, manufacturing requirements and plant conditions. The extent and variety for industrial heating processes is rarely realized, except by those directly concerned with the development of improved methods.

Experience has determined the methods of heat application, and the physical or mechanical requirements of the process, which, in a large measure, influences the type, size and general arrangement of the furnace, valves for control, control instruments, fuel used, etc.

The human element is always the ultimate controlling factor and occupies the same position in the heat treating department of our industrial works as the chef does in the hotel kitchen. The common and wasteful practice of delegating to unskilled men the control of important heat treatment processes can nowadays be somewhat eliminated by the proper use of modern automatic temperature control apparatus.

Need Skilled Craftsmen

It is not recommended, however, that the human element be entirely eliminated by the devices which govern the supply of heat, except in rare cases where the manufacturing routine does not vary in essential detail. By that is meant variations in size, shape, weight, quantity of flow, etc.

Recognition of the difference between control of the furnace temperature on one hand and control of the proper application of this heat to the product on the other hand, should cause appreciation of the importance of the skilled craftsman. A large percentage of the work passing through our modern heat treatment departments depends upon the skill and judgment of the operators for its successful treatment.

The need at the present time is for improved methods of heat control, and for competent operators who can properly employ the working tools, including furnaces, fuel, pyrometers, etc., for the conduct of the ever important work of heat treating.

Uniform Heating

Uniform temperature is necessary to produce uniformly heated product. But heating a chamber uniformly and uniformly heating a charge within that chamber are two distinct matters. The ideal conditions for the production of properly heated products are where the heating and cooling mediums are uniformly applied to the entire surface of the piece or section in the same manner, at the same time, at the same rate, for the same time, and in the same atmosphere. Automatic temperature control will go a long way to procure the uniform results desired.

There are hundreds of types of industrial furnaces in use today, including those heated by gas, oil, electricity, coal and wood. Some of these are modern design built to do actual work, while others are antiquated models and cannot be controlled satisfactorily even by skilled operators. For example, furnaces designed to burn coal and later changed by putting in an oil burner and closing the stack.

Both gas and oil-fired furnaces may be controlled by means of several automatic devices now on the market. Heretofore, the chief objections to the oil or gas-fired furnaces has been the lack of dependable automatic control. Burners were required to be manually adjusted, and naturally varied widely in accordance with individual conditions. In addition, there are the fluctuations caused by the making of regular adjustments as the result of opening doors, increase or decrease in the charge, or incidental factors such as changes in volume or pressure of the fuel.

The Electric Furnace

With the endeavor to overcome the difficulty of fluctuating temperature, the electric furnace came into use. This, notwithstanding its higher cost both as to installation and operation. Because of its higher cost, the electric furnace has been restricted to use within the limits of products of special material in which the selling price warrants the extra cost of treatment. The temperature in the electric furnace may be controlled by means of a suitable automatic regulator.

In the case of coal and wood fires, automatic damper regulation has been applied, but nothing has ever been used successfully so far as we know, because the human element entering is too large a factor.

The mechanical devices necessary to secure automatic control consist of, first, a pyrometer or thermostat actuated by the temperature in the oven or furnace, and making an electric contact at some predetermined point and breaking it at another. Second, an automatic valve or switch controlling the fuel input.

There are several types of control instruments, each for its own particular purpose. For lower temperatures not exceeding 800 degrees Farenheit a thermostat or thermometer controller is employed. These instruments are calibrated for various scales and make two contacts, a high limit contact and low limit contact.

For higher temperatures above 800 degrees Farenheit and not exceeding 3,000 degrees Farenheit a pyrometer controller is used. These operate on the thermo-electric principle with which, no doubt, you are familiar. The instrument acts as a thermostat making and breaking contacts on high and low limits.

Control Valves

The next thing in order to consider is the subject of control valves. These are divided roughly into two classes, the

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BURNS PATENTED TUBULAR TEMPER SCREW

PRACTICALLY INDESTRUCTIBLE. SIMPLE IN DESIGN. STURDY IN CONSTRUCTION. MADE OF THE BEST MATERIALS IN GENEROUS PROPORTIONS AND WITH SKILLED WORKMANSHIP. A FINISHED PRODUCT.

BURNS TOOL COMPANY

Okmulgee, Oklahoma

magnet or solenoid type and the motor-driven valve. Some types of magnet valves are operated directly by the pull of the solenoid and others by utilizing air or steam to actually lift the valve. The solenoid type of valve is the one which in the past has been extensively used, and the features of operation are quite familiar to most men in the heat treating field. We will, therefore, pass on to the more recent development and use of the motor-driven valve.

The illustration shows one type of motor-driven valve. In this, both the fuel and air valves are operated by one motor. If an automatic controlling instrument is used in connection with valves to measure temperature of furnace, when set to temperature wanted, a contact will be made which will start the motor. Both the valves are first adjusted to a low setting, giving a flame of perfect combustion, but too low to bring furnace up to desired temperature. When the valve is opened the motor

stops. With both valves in this position, they may be adjusted to give a high flame of perfect combustion, which will bring temperature of furnace slightly above the temperature wanted, then as soon as the furnace has reached the temperature higher than desired, the instrument will make contact, and thus operating the motor and close the valve to the low flame. All adjustments of the valves are made independently, and thus, in no way can one adjustment upset any other. When a sensitive controlling instrument is used, and the high and low flames are correct, it has been found that the furnace assumes the temperature desired.

Timing of Valves

In order not to impair the quality of flame during the time when changing from low to high, or high to low, it is essential that the valves are properly timed. This is taken care of when the valves are assembled, and can not change so long as the valve units are assembled to the power units. A standard make of motor is used, and can be furnished in practically all commercial voltages.

The greater power supplied by the motor makes this type of valve more reliable in operation, in comparison to the magnet type. That is, the operation is more positive and less subject to varying influences. The design permits rugged construction with delicate parts and fine adjustments eliminated. All these factors combine to make a valve capable of long continuous satisfactory service.

Automatic control can be used practically on all furnaces or ovens that are used for the following purposes: Hardening, tempering, carbonizing, sheet, rod, wire and tube mill annealing, spring fitting muffles, retorts and pot furnaces.

In summarizing the advantages of automatic temperature control, would say that when properly applied it will result in—

(1) Better quality and uniform product.

(2) Increase in production.

(3) A decrease in repairs on the furnace.

(4) No waste in fuel.

Services Available for the Oil and Gas Industry as—

CONSULTING ENGINEERS in all matters pertaining to:
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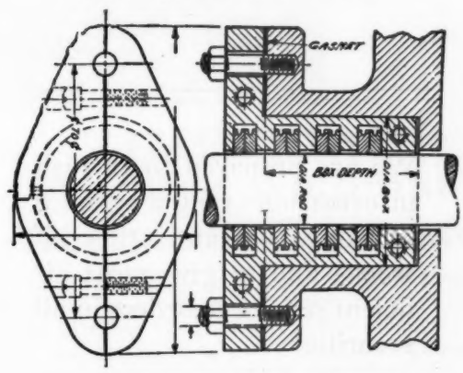

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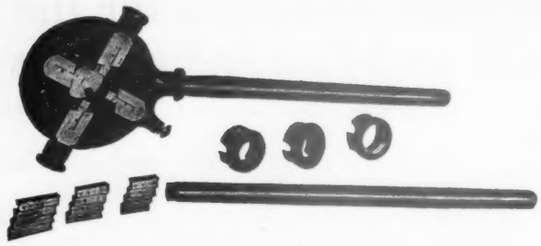

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Here is the "last word" in a pipe threading tool for the oil fields. The old, reliable, sturdy "Toledo" No. 1A ratchet tool for threading 1" to 2" pipe, with improved taper pins that permit over, under or standard-size threads.

Genuine "Toledo" tools have a reputation for efficiency, ease of operation and durability that has never been equalled. Now with the improved adjustment "Toledos" are more desirable than ever, and at new low prices never before reached. Ask your jobber to quote you the new price on the "Toledo" No. 1A tool and extra dies for it.

"Toledo" dies are made as nearly perfect as fine steel, skill and experience can produce. They are unquestionably the finest pipe dies in use today and to protect purchasers against inferior substitutes, every genuine "Toledo" die is marked with the "Toledo" trade-mark.

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Oil and Burner Men Need United Effort In Heating Campaign

By H. L. Doherty

Paper Read Before Michigan Independent Oil Men's Association at Grand Rapids

Oil and artificial gas are bound to go into very extensive use in the heating of homes. This demand has not sprung up through any stimulating efforts on the part of the oil industry, but has developed by the direct demand of the home-owning public.

Thousands of oil burners are now being used successfully, and no one could stop the development of this business if he were to try, while on the other hand by a reasonable effort on the part of different people who are interested in this service, an enormous impetus could be given to it.

It would seem at first glance as though this business was so competitive that there would be no good ground for urging cooperation; on the other hand, there can be no question but what the problems of all who are interested in pushing oil for house heating purposes are more or less common. We must collectively fight the battle of oil with the public authorities, as it is only human nature for fire commissioners of every community either to absolutely forbid the use of oil, or place such restrictions upon the use as to make it prohibitive.

The oil burner company or one burner manufacturer could not possibly hope to force reasonable rules. One of the most important things is, that the public must be educated, and this cannot be done by a single oil company or a single burner company, but must be done collectively. Cooperative work will make business for all, and that is the reason why everyone who is interested in promoting oil for house heating purposes should stand together and cooperate on these problems which mean the greatest utilization of oil for house heating.

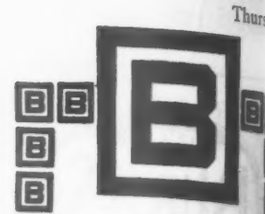
Really Economical

There is, to my certain knowledge, a total lack of appreciation of what a home owner can afford to pay for heating his house with oil. The price of coal is only one item in the cost of heating houses with coal, and there must be kept in mind at all times, not only the cost of the coal used in heating a house, but the cost of heating a house with coal. Often where coal is the most expensive, the costs of taking care of the furnace, firing it, and the disposal of ash, is greater than the entire cost of the coal, and in places where coal is relatively cheap, the cost for taking care of the furnace and removing ash, is often twice as much as the cost of the coal consumed.

We are burning now, every day, 1,000,000 bbls. of oil, much of which is sold for purposes for which coal—which is more or less abundant—would be equally available, and this 1,000,000 bbls. of daily consumption used in many cases in strict competition with coal, offers an elastic factor which warrants us in developing all of the superior uses for oil where it has a greater value than other forms of fuel.

House heating with oil cannot be measured by mere cost. The artificial gas companies in this country saw electricity adopted for lighting purposes almost universally at a time when they could give the public five times as much light for the same money as the prevailing rates of the electric companies, but the public then wanted convenience and comfort, and ever since has been educated to a desire for convenience and comfort and has developed a greater willingness to pay for convenience and comfort. It is almost impossible to heat a house satisfactorily with coal, but it is possible to heat a house with the greatest degree of satisfaction with oil as the fuel.

There are nearly 15,000,000 motor cars in use in the United States, and



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yet the same people who say that the public cannot afford to heat their houses with oil would have said 20 years ago that not more than 500,000 people in this country could have afforded to own and maintain a motor car; nevertheless, they do, and in many ways the motor car is much more of a luxury, and much more expensive relatively than heating a house with oil. It took some time to convince them, but the oil companies are now alive to this problem and will give to the burner manufacturers hearty co-operation.

Large Quantities Used

If anyone had asked the oil industry 20 years ago where it was going to get 180,000,000 bbls. of gasoline to supply the motor cars of this country in 1923, the industry would have said that the problem was impossible, but we have met the problem and are not afraid now to say that we will supply all of the gasoline that is needed. We can say also to the oil burner manufacturers that we will supply all of the oil that is needed for house heating purposes.

In this connection we do not ask you to take us entirely on faith, for we are bound to the fact referred to, that an average of more than 1,000,000 bbls. of oil a day are used for fuel purposes. Much of this is used more or less in competition with coal, and where its use to the industry is not of as great value as its use would be to the household user, therefore, as the householders of the country demand more and more oil for house heating purposes, a slight raise in the price will drive more and more of these other fuel oil users to other and cheaper forms of fuel and making available a corresponding amount of oil for house heating purposes.

It is true that a large part of this 1,000,000 bbls. of oil now being used each day for fuel purposes is not of a character suitable for house heating with the present burners now on the market, but practically two-thirds of it, either could be used for house heating purposes, or could be inexpensively fabricated into forms suitable for house heating.

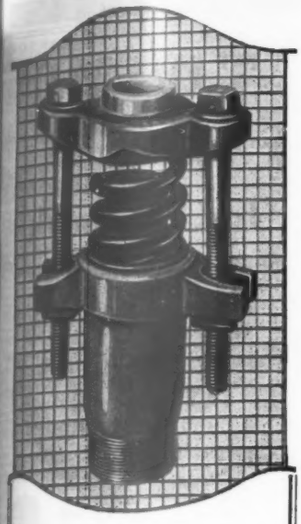
It is well to call the attention of burner manufacturers to the important fact that their burners should be developed so they can use the heavier grades of oil. The less volatile an oil, the safer it is, and what is really wanted in a household burner is one that will use any form of oil that will flow, even to a fuel oil which carries all of the still bottoms.

Oil for house heating should be intelligently applied, and especially from the standpoint of fire hazards. The type of oils used for house heating are perfectly safe when used in the proper installations. The public is apt to think of the dangers of oil by judging entirely from the more volatile and inflammable oils, such as gasoline, which has been extensively advertised. Every effort should be made by everyone interested in the promotion of oil for house heating purposes to make these installations absolutely safe, and this can be easily done when men thoroughly conversant with fire hazards and petroleum products are consulted.

SURVEY'S REPORT ON PERMITS

During December the Geological Survey reported upon the structural relations of lands embraced in 299 applications for prospecting permits under the oil sections of the leasing act of February 25, 1920, thus bringing the number of such reports rendered since the passage of the act to 21,333. Nearly 700 such applications were pending in the survey December 31, 1923. More than 400,000 acres in Utah formerly included in oil withdrawal were restored to entry in December, 1923. Nearly 1,500 acres in Wyoming were defined as within oil and gas structures under the act of February 25, 1920.

Say you saw it in The Oil and Gas Journal.



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An absolute guarantee against breakage goes with every Nor-Bro Spring Stuffing Box.

Extreme durability is combined with correctness in design. The heavy oil-tempered spring exerts a constant pressure on the packing, forcing it tightly against the rod.

The bowl is extra deep and holds plenty of packing. Bottom bushing is easily removed so packing can be quickly changed. Rods pull through without removing box.

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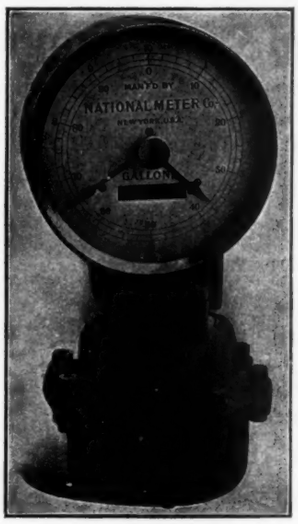

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Every measuring operation can be handled successfully by the EMPIRE oil meter. It is closely accurate, it **holds** its accuracy, and is easy to run and to keep in order.

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THE Imperial makes tremendous savings on pipe line work.

The 15, 25, and 50-pound sizes are small enough to transport easily and quickly, yet large enough to insure an adequate supply of gas at a saving of 75% over the cost of acetylene in cylinders.

IMPERIAL
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Acetylene Generator

The Imperial Type B is the only portable acetylene generator made that is practical for work in the oil fields—especially for carrying along in laying pipe lines.

Even while being carried from place to place, it will generate gas 3 to 5 cents cheaper per cubic foot than you can buy it in cylinders. Eliminates delays and the expense of drayage and express.

Generation is entirely automatic. When you light your torch it begins—when you extinguish your torch it stops.

Carbide to water type; medium pressure; made in 15, 25 and 50-pound sizes.

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(PATENTED)

This illustration is the famous Larkin Sand Pump which is found in every oil field throughout the world.

Besides a full line of Drilling and Fishing Tools and Packers of all kinds and sizes, we manufacture the LARKIN Patent Never Slip Pipe Grip, which does away with the old-fashioned way of putting in casing with rope and tongs, and is less expensive, more durable and more easily handled.

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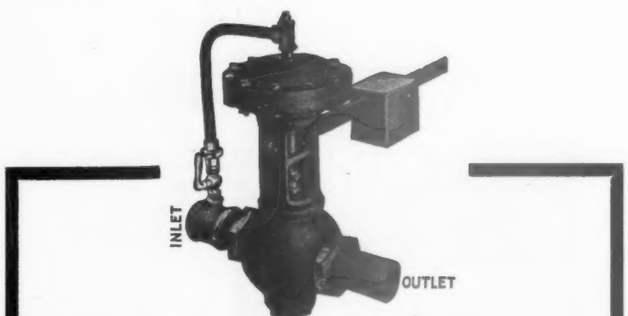

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When the pressure has fallen to a lower point than is considered advisable by means of

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This regulator is placed in the pipe line and automatically controls the flow of gas.

The pressure at which the regulator is desired to operate can be varied as may be desired.

All back pressure regulators are provided with a lever which is balanced on a knife-edge fulcrum and supports the valve by means of a toggle connection, which reduces friction and insures quick response to the slightest change of pressure.

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Need Water Supply Before Recovery of Shale Oil Is Begun

Any engineer making a trip through the oil shale region of the Rocky Mountain country will be struck by the fact that the water supply problem will have to be solved before an oil shale industry of any considerable size can be started there, the Bureau of Mines points out in Technical Paper No. 324, by J. J. Jakowsky, on "Uses of Water in the Oil Shale Industry." The situation does not appear so serious to those who do not travel far from the main streams or arteries of travel, although even in these places it may cause thought. Only when one gets away from the railroads—and often that means visiting the richer shale deposits—does the magnitude of the water supply problem become fully evident. There are few large water courses, and these are generally far apart. Many of the smaller tributaries are periodic; they may be entirely dry a part of the year but roaring torrents during the rainy months. Little is known as to possibilities of obtaining adequate water supplies by well drilling, but in many places the prospects do not look very favorable.

Those deposits situated on the main watercourses may seem to be adequately supplied, or so situated that they may be adequately supplied, with water for development of production work. It must be borne in mind, however, that much of the water of these streams is already appropriated for agricultural or other uses, perhaps lower down on the stream, and that the amount of such appropriation may increase, as agricultural demands ordinarily take legal precedence over industrial requirements.

At the present stage of the shale industry in this country it is almost impossible to state definitely the amount of water required for large scale operations. The amount required for mining and crushing the shale will probably be similar to that in the coal mining industry where similar conditions exist. The per capita domestic requirements for water will vary with the location of the plant and with local conditions. The most important use for water is in retorting and refining, but the amount that will be required for these purposes is more in doubt than that for power or domestic use.

No standard retorting or refining practice for oil shale and shale oil has yet been established in the United States. Many retorting processes have been proposed and perhaps 25 or 30 experimental or demonstration plants have been erected in different parts of the country. Practically without exception, however, these plants are too small to be considered as commercial, or to give operating data that would be of much value in estimating water requirements.

The proposed retorts for treating oil shale may be grouped in a general way under two heads: (1) Those in which dry, destructive distillation takes place, and (2) those in which distillation progresses in the presence of superheated steam or gas. In the well known Scottish type of retort, used for many years in Scotland, steam is used. Whether or not Scottish practice will be followed in this country remans to be seen, but as the Scottish plants are today the only ones operating on a large commercial scale, knowledge of their water requirements will be of value in estimating requirements for plants in the United States. If, later on, American retorts should be designed differently so that they use less water or none at all, this development will in many cases be a point decidedly in their favor.

Shale retorting and refining plants will require water, whether or not the retorts are steamed. Large quantities of water will be needed for power, mining and domestic uses. The oil vapors must be condensed, and distillates treated, and the fixed gases scrubbed; and in other stages of retorting and refining there are many uses for water. Yet even now,

TRIMO

The Tools for hard work

Rugged materials plus superior design and workmanship make TRIMO tools stand up under rough usage.

The Pipe Wrench

Eight Sizes

has many saving features. Insert jaw in handle, replaceable when worn; steel frame that will not break; guards to protect the adjusting nut; hidden spring always in place.

Other tools having the Quality TRIMO Mark are the

Monkey Wrench—Pipe Cutter —Chain Pipe Wrench

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(1)

large oil shale plants are beng proposed in regions where the water requirements, if only for mining and domestic use, will present a problem that may require the expenditure of considerable technical ability and capital for ultimate solution.

Technical Paper 324, which was prepared in cooperation with the University of Utah, contains a chapter on "The Sanitation of oil Shale Camps," by Dr. A. L. Murray.

POLISH PRODUCTION DOWN

Crude oil output in Poland of 66,000 metric tons in October established a high figure for the year. The improvement was not maintained, however, and the November output dropped to 55,000 tons. The export of crude and refined oil was handicapped by the inability of the Polish exporter to meet American competition.

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The best that's made for use in territory where you have excessive sand in the oil.

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For use where lodestone or other elements which act on steel are in the water or where there is alkali in the water or oil.

Government Royalty In Salt Creek Field Up $13,500 Daily

WASHINGTON, D. C., Jan. 28.—Additional revenues to the Government on royalty oil at the rate of approximately $13,500 daily or $404,000 monthly will accrue in the Salt Creek oil field as a result of changes in prices of Mid-Continent crude oil that went into effect on January 19, it is announced by Secretary of the Interior Work.

Salt Creek crude has an average gravity of about 37.5, which will mean an average price of a little more than $1.60 a barrel for the Government royalty oil, which sold on a basis of the Mid-Continent posted price for oil of similar gravity. On the basis of the production for November (the last month for which figures are available) the royalty oil accruing to the Government amounts to approximately 674,000 bbls. per month. The new price represents an increase of 20 cents a barrel over the price in effect on January 9, and of 60 cents a barrel above the price the Government received at the beginning of the month. On the basis of the royalty received for the month of November, the new price means an additional revenue to the Government at the rate of approximately $135,000 a month, or $4,500 daily above the amount that would have been received under the price effective on January 9, or approximately $404,000 monthly, or $13,500 daily over the amount that would have been received on the basis in effect on January 1 of this year.

RECEIVER NECESSARY IN LEASE LITIGATION

AUSTIN, Tex., Jan. 26.—The Third Court of Civil Appeals made final its decision holding that a receiver was legal and necessary to assume charge of an oil lease and develop it during the pendency of litigation involving the title to the oil rights on the land. The motion for rehearing was formally submitted and overruled. It had previously been examined and immediate action was taken in order that the important case will get to the Supreme Court without delay. It is that of the United North and South Oil Co. vs. Merewith, from Caldwell County.

On a former day the court upheld the appointment of a receiver on the ground that the oil wells on the adjoining leases would suck up the wealth from under the land in litigation and thus dispose of it before a final decision as to title could be had. There were no Texas precedents.

Under the court's decision the receiver is empowered to go forward with development and sell the oil when produced, retaining the receipts for disposition by the court when title is finally determined.

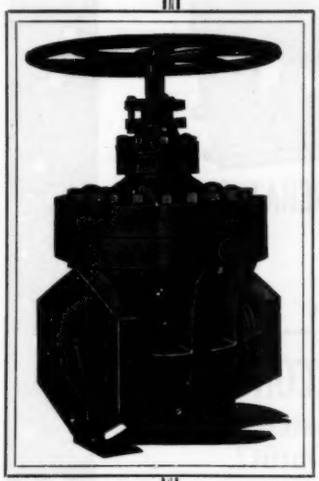
NEW CORPORATION FORMED

HOUSTON, Tex., Jan. 28.—The Neilan Corp., of Houston, has been chartered with a capitalization of $100,000 for the manufacture of sand pumps and other field equipment. The officers are: President and general manager, Walter Smith; vice president, J. P. McDonough; secretary and treasurer, M. McDonough. The above together with P. A. Neilan, G. A. Humason and W. H. Haver constitute the board of directors.

MISCROSCOPE FOR SANDS

The University of Colorado will have equipment soon to make microscopic examination of oil sands and shales. This will not only be of material benefit to the oil operators of the Rocky Mountain region, but will be of great benefit to the students in geology at that school. The Midwest Refining Co. has arranged to furnish the necessary equipment.

Like a High Grade Watch



The mechanism that operates Ludlow Double Gate Valves is as carefully made and operates as smoothly. as that in a high grade watch. That is why Ludlow Gate Valves operate so dependably under all conditions of service.

Write nearest office for prices and particulars.

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STOP WASTING OIL

Tight steel roofs on your oil storage tanks reduce evaporation losses by 70%. The average annual losses where leaky roofs are used amount, according to U. S. Bureau of Mines Bulletin No. 200, to 2% to 3% of the volume where crude oil is stored and 4% to 5% for gasoline. The portion evaporated from crude oil in storage is in reality not crude oil but merchantable gasoline.

Can you afford to stand this loss year after year? Would it not be better to use Pittsburgh-Des Moines tight storage tanks than the ordinary leaky roofs? ⅛" steel roofs caulked gas-tight by the Pittsburgh-Des Moines method will save 60 to 70% of this loss—enough, even at present prices of oil, to pay for the cost of the roof the first year!

Fabricators and erectors of all kinds of steel tanks for oil or gasoline storage; also oil stills, agitators, etc. Inquire for details. We gladly quote, without obligation, on steel tanks of any capacity. Ask for our new Oil Tank Catalogue No. 77. Write our nearest office.

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Have You Investigated the New
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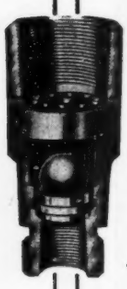

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STANDING VALVES
USE A
LARGER BALL and SEAT
AND
GAS ANCHOR

By locating the valve ball and seat in the valve body on the outside of the working barrel, ROARK Valves permit the use of a larger ball and seat and gas anchor.

ROARK Standing Valves will increase your production yet will reduce the cost.

Descriptive Folder on Request

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Texas Oil Pump Co
Waco, Texas

Road Builders Turn To Use of Gasoline For Motive Power

CHICAGO, Jan. 28.—The oil industry will be called upon to furnish a far greater amount of petroleum products in 1924 than it did in 1923 as a result of recently announced good roads programs in all parts of the United States. Hard-surface roads, bridges and drainage work and maintenance of an increasingly complete network of intercoastal highways necessitated an expenditure of about $1,000,000,000 in 1923 and estimates of construction work planned for the coming year show that nearly $1,500,000,000 is to be spent on new highways in this country.

These and other interesting facts were brought out during the joint twenty-first annual convention of the American Road Builders' Association and the fifteenth annual National Good Roads Show at Chicago recently. Oil men will be interested to know that an industry of the magnitude of good roads business is turning more and more to the use of petroleum products for motive power in construction work. In addition, it is easy to see that more good roads will result in more automobile traffic and the sale of more motor fuel.

Thirty thousand delegates to the convention from all parts of the United States and Canada predicted that the recently observed steady increase in road building activity, so noticeable for the last two or three years, would be followed by a phenomenal highway development program in 1924 and succeeding years. Speakers of national prominence were included on a program which showed the need for more and better roads in all parts of the United States.

Extensive Exhibits

Some idea of the magnitude of the good roads work can be understood when it is realized that Chicago's Coliseum was filled to overflowing with more than $1,500,000 worth of road making machinery of all types and description, weighing more than 2,700 tons. Everything from the mammoth steam shovel on a railway track to the lowly pick and crowbar was exhibited. More than 250 manufacturers were assigned spaces in the Coliseum and adjoining buildings.

The heaviest unit was a crane weighing 27 tons. Power shovels, pavers, excavators, cranes, rollers, tractors, locomotives, ditchers, dredgers, conveyors and other construction equipment was included in one of the most complete exhibitions of its kind on record. With only few exceptions, the big machines were operated by gasoline engines. Many of the larger and heavier pieces, formerly steam operated, had been recently equipped with gasoline engines.

Maps of every description, showing practically all the hard surface roads in the United States and marking the transcontinental highways, were scattered about the Coliseum in profusion. Many of the exhibitors of the heavier machines had working models in their booths and supplemented them with motion pictures of the larger machines in actual road making work. State highway engineers and commissioners, county and city authorities rubbed elbows with machinery salesmen and manufacturers of equipment as they watched the big show.

"We are entering into a new era of road building," said Charles M. Upham, manager of the convention and show, who is also highway engineer for the State of North Carolina. "It is the era of business men in charge of business methods. The purpose of this annual convention and show is to render road service to the people by introducing labor saving machinery and new methods to lessen the cost of road building."

Large Road Expenditures

"This country is now spending a billion dollars a year on the highways alone," said Frank Page, president of the American Road Builders' Association. "The total expenditure of the Federal Government for Federal aid for roads is a little less than one-half of the total Federal taxes paid by the automobile industries in the same time."

The inroads of gasoline as motive power were seen in the giant gasoline shovel, mounted on caterpillar wheels, gasoline operated stone crushers, road rollers, graders, planers, mixers, conveyers, locomotives and tractors. Numerous smaller pieces of equipment were operated by gasoline engines.

During the convention it was brought out that the State and Federal Governments now have under construction or contemplated 170,000 miles of main interstate and intercounty roads reaching practically every city of 5,000 inhabitants. This immense network of roads will connect farm and market and will afford an excellent supplement for existing rail and water transportation.

The record for Federal aid roads up to November 30, 1923, was as follows: Concrete 5,346 miles, brick 455 miles, bituminous concrete 886 miles, bituminous macadam 1,362 miles, water bound macadam 859 miles, gravel 12,060 miles.

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25 Cal., Vest Pocket, 8 shots—$14; 25 Cal., Reg. Model, 10 shots—$14; 32 Cal., Reg. Model, 9 shots—$15; Holsters, either cal.—$1.50; Mauser Ammunition, per 100, 25 Cal.—$2.90; 30 Cal.—$3.15; 7.63mm—$4.55; 9mm.—$5.50. Mauser Automatic, with wood holster, stock, leather straps, etc. 10-shot Pistol or rifle—$35.

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sand and clay 3,251 miles, and graded and drained dirt roads 6,305 miles.

"Better roads for less money," was the slogan adopted by Mr. Pape for the association. He suggested finding the solution in labor saving machinery and more modern methods of road construction. With the proper combination of various machines exhibited he contended that more and better pavement could be put down in a few minutes now than could be constructed after hours of effort with the equipment and methods of five years ago.

One of the most interesting sections of the show was that devoted to road oil and road oiling machinery. Several oil and asphalt companies exhibited their products also.

Indiana Marketers Hear Nicholas Warn About Wide Margins

CHICAGO, Jan. 28.—Indiana Independent Marketers Association meeting at Hammond, Ind., adopted a resolution strongly disapproving the action of Dodge Bros. Motor Car Co. in entering the oil business as distributors of lubricants through their dealers. The association also adopted a resolution opposing the sale by members of certain lubricants.

L. V. Nicholas, president of the National Petroleum Marketers, cautioned the association against wide margins in the distribution of petroleum products. He declared the present practice of some companies in rebating one-tenth of the purchase or rental of filling station equipment in addition to a 2-cent differential would in time lead to a 3-cent differential basis. He asserted that a wide margin was dangerous.

Mr. Nicholas asserted there was not enough distillate in the world to furnish fuel for the burner installations contemplated for the next 12 months. Late figures show 300,000 domestic burners in use in the United States now. Manufacturers hope to have 2,500,000 burners installed in two years. One burner wil consume the equivalent of five automobiles in fuel. Mr. Nicholas pointed out that the installations contemplated for the next two years would use the equivalent of the present consumption of all automobiles. He advocated the national program of his association as a step in warding off Governmental control.

J. M. Judson, credit manager of the Sinclair Refining Co., Chicago, instructed members on proper credit management.

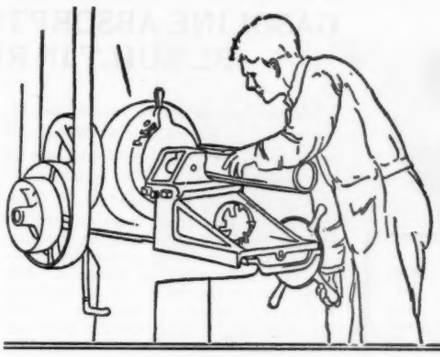
H. N. Tolles, president of the Sheldon school, Chicago, warned Indiana marketers that price cutting was evidence of poor salesmanship. He outlined the fundamentals of correct salesmanship as applied to petroleum marketing.

The Indiana marketers approved the employment of C. D. Chamberlain, general counsel of the National Petroleum Association, Cleveland, Ohio. Oil inspection, it was said, was done in a haphazard manner by political officeholders and was burdensome to oil men.

Luncheon and dinner and excellent entertainment was furnished by H. J. Kennedy of the Marland Refining Co., Hammond, Ind.

NEW WORK IN TIDIOUTE

TIONESTA, Pa. Jan. 26.—Since the advance in the price of crude local producers are making plans for extensive operations. Charles Carnahan, discoverer of the Tidioute Field, has located No. 20 well on the Jennings lease in the gusher field. He has started operations and from indications the well will be a good producer. A deep well on Tidioute Creek is in progress of drilling, backed by a Baltimore syndicate, and this will be sent to the medium sand, a depth of about 5,000 feet at this point. It is down about 2,100 feet, and the hole will be reamed out and 10-inch casing used.



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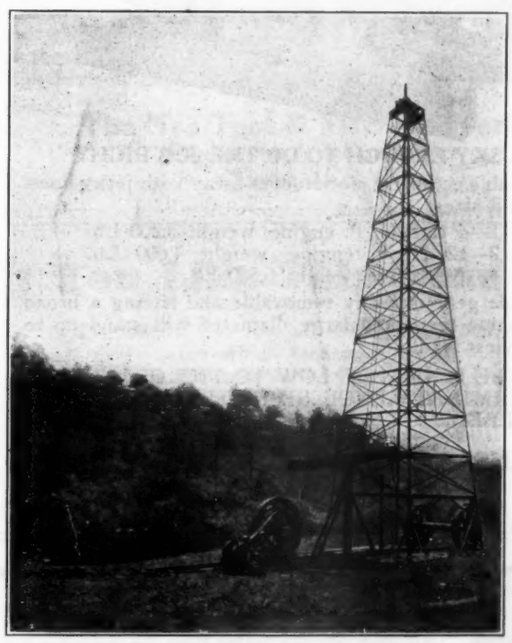

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GASOLINE ABSORPTION PLANT WILL BE BUILT IN RUMANIA TO SAVE GAS

Immense quantities of natural gas being wasted in the oil field at Moreni, 60 miles from Bucharest, Rumania, are to be saved and used to make gasoline, according to plans announced by E. Goldberger, of Bucharest, who is in the United States now completing arrangements for the building of the first gasoline absorption plant in Rumania. The plant will be erected in the oil field and will have a capacity at the start of 1,000 gallons daily. Mr. Goldberger will purchase part of the material for the plant in this country and some of it abroad.

None of the wells in the Rumanian oil field is pumped, being swabbed or bailed and Mr. Goldberger has invented a device to save the natural gas from coming from the well with the oil. It consists of an arrangement much like a tank which fits over the hole and permits the working of the swab or bailer under the cover of the tank. The oil brought from the well flows from this tank while the natural gas is piped from the top of the tank.

Prices for gasoline in Rumania average about 50 per cent more than prices in Oklahoma, and are made on prices quoted in New York. The Rumanian prices are determined by prices obtaining in New York. There are a fairly large number of automobiles in Rumania, many of which are of American make and there is a good market for the gasoline.

The company which will build the absorption plant is the Gazolina-Rumania Co. The production of oil at Moreni is said to average between 30,000 and 35,000 barrels daily at this time and it is of a good grade, the price now averaging from $1.75 to $2 a barrel. There is considerable discussion in Rumanian oil circles at this time regarding cracking plants for refineries but nothing as yet has been done to install any cracking units. There are several refineries in the country. The largest operators are the Royal Dutch-Shell and the Standard Oil Co. of New Jersey.

Mr. Goldberger, during his visit to this country in the past week, was enthusiastic regarding the work being done by the United States Bureau of Mines and the cooperation extended by that Government bureau to those interested in the oil industry.

BELIEVES SHALE OIL WILL BE FUTURE FUEL

When the future for the employment of fuel oil in industry is considered, says the Petroleum Times, London, one is confronted with the possibility of fuel oil from petroleum becoming too valuable for other purposes to be used as a mere heat generator. These questions have received considerable attention in certain quarters, and it has been suggested that the fuel oil of the future will be mainly derived from the products of oil-shale distillation. The oil products from oil-shale distillation are undoubtedly inferior in quality to the average petroleum, except possibly in a few cases. The shale often contains products other than hydrocarbons volatile at the retorting temperature. These volatile non-oily substances form compounds with the hydrocarbons often of an objectionable type, and hence the subsequent refining problem is much more formidable than that of refining petroleum. This fact tends to make it economically impossible to produce refined products equal in quality to the equivalents obtained from petroleum.

It is practically certain that sooner or later the refining of highly impure shale oils will be both technically and commercially impossible, but in the meantime, while petroleum products remain relatively abundant, it seems probable that it will not be economic.

AUTOMOTIVE MARKET FOR 1924

The quarterly sales surveys thus far received from the foreign representatives of the Department of Commerce indicate generally that 1924 will be a good year for American exports of automotive products. The outlook in the United Kingdom, South Africa and Australia are particularly promising. Distinct improvements have also been noted in trade conditions of India and Austria. While France does not offer as promising a market for American products, 1924 is expected to be good from the domestic point of view. The situation in Italy is less favorable than in other countries from which reports have been received.

TO BE OIL BURNER

HOUSTON, Tex., Jan. 28.—The ocean going tug Colonel Rockwell, towing barges between Tampico and Gulf ports is being converted into an oil burner. It will have a tank capacity of 600 bbls., or a supply for a 17 days' run. The work is boing done at Galveston.

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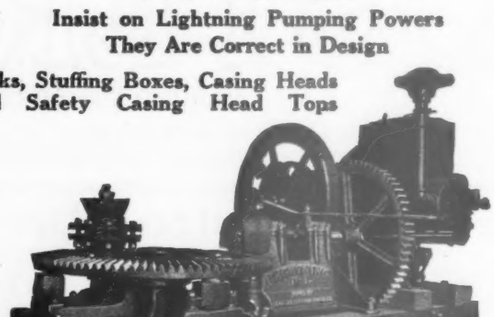

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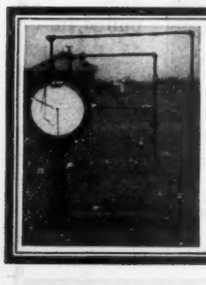

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Four Million Feet Of Gas Being Made In New Mexico Well

ARTESIA, N. M., Jan. 26.—Four million feet of gas is being made daily by the No. 3 well of the Illinois Producers Co., in Section 25-18-27, about 13 miles southeast of Artesia and on the east side of the Pecos River. The gas sand was entered at about 1,890 feet, or the same level at which the company found oil in its No. 1 well in Section 31-18-27. The gas blew in unexpectedly and operations were suspended.

This company's first well is reported making 500,000 feet of gas and to have 1,000 feet of oil in the hole. Geologists believed that the location was on the edge of the structure and the company drilled one to the west and is drilling another to the east, in Section 32-18-28. It is drilling No. 4 in Section 20-17-27. The company has about 50,000 acres under lease east of the Pecos. Dry holes west of the river caused the company to expore the east side, although surface structures appeared to be more favorable on the west side.

Activity is reviving over Eddy and Chaves counties and the territory is attracting geologists from several major companies. The Texas Co. is reported leasing in Eddy County. The Picher Oil & Gas Co. of Picher, Okla., is drilling in 18-18-27, Etz and others, in Section 22-18-27. Smith and others in Section 8-18-27, Hawkins and others in Section 10-19-26, the Buffalo-Roswell Oil Co. in Section 26-11-27, Bent and others in Section 16-9-25. Nance and others have a derrick in Section 20-11-25 and the East Eddy Oil Co. has completed a block in Section 16-28.

In the vicinity of Artesia, Hawkons and others have a well reported making 25 bbls. from a sand at 900 feet, in Section 10-19-26. The Tri State Oil Co. is drilling two in Section 18-26.

CARBON PLANT IN ARKANSAS

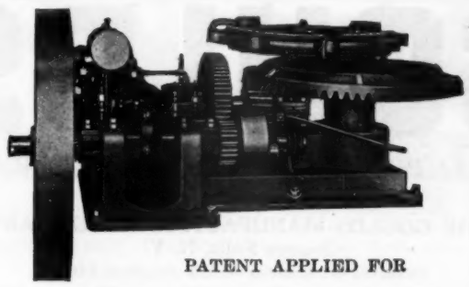
LITTLE ROCK, Ark., Jan. 26.—R. F. Reeves, of Texas, and associates have been granted a permit by the Arkansas Railroad Commission to erect a carbon black plant in Ouachita County, Arkansas, the first permit of the kind granted in that State. The plant is to be located within 3 miles of Camden and will cost about $350,000, according to John F. Streepey, attorney for Reeves. Gas produced by a sand beneath the oil sand of the Camden territory is to be used principally.

JOPLIN GAS RATE SUIT

KANSAS CITY, Mo., Jan. 26.—The Joplin, (Mo.) Gas Co. is to have a final hearing on its application for an increase in gas rates before United States Judge A. S. Van Valkenburgh in Kansas City on February 6. Counsel for the gas company and the Missouri Public Service Commission requested removal of the case from Joplin to Kansas City. The company asks for a permanent injunction restraining the city of Joplin and the Missouri Public Service Commission from interfering with the company's increasing its rate 7 cents per 1,000 feet. The company is charging the additional 7 cents by virtue of a temporary restraining order.

NEW REFINERY AT LOUISVILLE

The new plant of the Louisville Petroleum Refining Co., at Louisville, Ky., a recently organized concern, will have a capacity of 2,000 bbls. a day. The plant is being built at the edge of the city, according to Chicago oil men who have been there recently. It will be equipped with two Dubbs units for cracking. W. J. Caveney, formerly associated with the engineering department of the Sinclair Refining Co., is in charge of the construction work of the Louisville plant.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CRUDE PETROLEUM PRICE CHANGES 1923

(Continued from Page 166)

$1.30; 40° gravity and above, $1.75. Change met by the Sinclair Crude Oil Purchasing Co., Gulf Pipe Line Co., Cosden Pipe Line Co. and Gypsy Oil Co. Empire Pipe Line Co. met price except in Healdton district where the company continued to pay price established by the Magnolia Petroleum Co.

Magnolia Petroleum Co. met the Prairie prices on all grades above 33° gravity. The company posted the following prices for the lower gravities: Below 28° gravity, 50 cents; 28° to 30.9° gravity, 70 cents; 31° to 32.9° gravity, 90 cents.

The Humble Oil & Refining Co. adopted the Prairie Oil & Gas Co.'s prices for North Texas.

September 20.—The Joseph Seep Purchasing Agency reduced all grades of Pennsylvania crude 25 cents. The Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 20 cents. Cabell, Somerset medium and Somerset light oils were reduced 15 cents per barrel as was also Corning crude. Canadian crudes reduced 20 cents. The Texas Co. adopted the Prairie Oil & Gas Co.'s schedule for all districts except Healdton grades, where the Magnolia Petroleum Co.'s quotations on the lower grades are used.

September 21.—The Ohio Oil Co. and the Mid-West Refining Co. made the following changes in Wyoming crude quotations: Grass Creek, Elk Basin, Big Muddy and Rock Creek crudes were reduced 35 cents per barrel. Lance Creek crude was reduced 50 cents and Mule Creek crude was reduced 20 cents per barrel. Salt Creek, Osage, Greybull, Torchlight and Hamilton Dome crudes were also reduced 35 cents per barrel.

October 8.—Humble Oil & Refining Co. announced a new schedule of prices for North and Central Texas crudes amounting to reductions in some gravities and advances in others. New prices are given under the North Central Texas quotations. Company takes 100 per cent runs under the new prices.

October 9.—Standard Oil Co. of California reduced California crudes of 22° gravity and above from 2 to 28 cents a barrel. The Texas Co. reduced North and Central crudes of 33° to 39.9° gravity 20 cents, and 40° gravity and above 25 cents. Company agreed to take 100 per cent of the runs.

October 13.—Magnolia Petroleum Co. announced a new schedule for Texas crudes, meeting The Texas Co. schedule on grades above 33° gravity and putting into effect the prices paid for Healdton, Okla., grade oil on oils below 33° gravity.

October 17.—Gulf Pipe Line Co. announced price of 75 cents on Gulf Coast heavy crudes, except Blue Ridge and Pierce Junction, where the new price was 65 cents.

October 19.—Humble Oil & Refining Co. announced a reduction of 10 cents on oil below 30° gravity and a reduction of 20 cents on the four higher grades, applying to crudes in North and North Central Texas. New prices range from 80 cents to $1.30.

October 20.—Osage, Wyoming crude was reduced 15 cents to $1.20.

October 30.—The Magnolia Petroleum Co. announced the adoption of its North Texas five-grades schedule and prices for Oklahoma and Kansas. The company agreed to buy 100 per cent of the runs. The Empire Pipe Line Co. announced adoption of the same schedule. Magnolia Petroleum Co. reduced Powell crude 25 cents; change was not met by all major companies.

November 1.—The Magnolia Petroleum Co. elected to exercise its option to purchase all crude oil in its storage according to the terms of storage contracts applicable thereto.

November 2.—The Gulf Pipe Line Co. restored its former prices of $1 on all grades of Gulf Coast crude except Blue Ridge and Pierce Junction crudes which

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were restored to the former price of 90 cents.

November 8.—Prairie Oil & Gas Co. reduced Kansas, Oklahoma and North Texas crudes from 15 to 50 cents and announced that it would increase its runs. Magnolia Petroleum Co. reduced its schedule of prices for the same area with the exception of 40° and above from 10 to 15 cents. These changes with exception of Humble Oil & Refining Co. and The Texas Co. met by major purchasing companies on same date. Ohio Oil Co. reduced Illinois and Princeton crudes 25 cents. Magnolia Petroleum Co. reduced Corsicana heavy 5 cents.

November 9.—The Texas Co. met Prairie prices in Kansas, Oklahoma and North Texas. Ohio Oil Co. and Midwest Refining Co. reduced Wyoming and Montana crudes 30 to 45 cents with the exception of Sunburst, Mont., where no change was made. Ohio Oil Co. reduced Lima, Indiana, Waterloo, Plymouth and Wooster crudes 25 cents. Imperial Oil, Ltd., reduced Petrolia and Oil Springs (Canada) crudes 25 cents.

November 11.—Cat Creek crude reduced to 90 cents.

November 13.—Joseph Seep Purchasing Agency reduced all grades of Pennsylvania crudes 15 cents. Cabell crude was reduced 15 cents and Somerset light and medium crudes 10 cents.

November 14.—Joseph Seep Purchasing Agency reduced Corning crude 20 cents.

November 15.—Standard Oil Co. of Louisiana reduced Caddo, Homer, Haynesville, El Dorado, Bull Bayou and De Soto crudes from 10 to 25 cents with the exception of Caddo below 32° and Homer below 31°, which were unchanged.

November 16.—The Texas Co. announced that it would purchase all oil in storage and would absorb all storage charges provided the sale was made within 10 days.

November 19.—Magnolia Petroleum Co. advanced Corsicana light (Powell) crude 25 cents. The same company on October 30 reduced this crude 25 cents. Change at that time was not met by all major purchasing companies and resulted in the return to the posted price of $1.

November 20.—Lance Creek and Osage crudes advanced 10 cents.

November 16.—Atlantic Oil & Producing Co. posted new prices for Stephens County, Arkansas, crude. The company has two grades replacing four schedules.

December 13.—The Texas Co. in the fields of North and Central Texas, where it buys crude on a gravity basis, changed its prices on all schedules above 33° gravity to conform to those of the Humble Oil & Refining Co. Below 33° gravity was unchanged.

December 14.—Joseph Seep Purchasing Agency advanced all grades of Pennsylvania crude 25 cents.

December 15.—Magnolia Petroleum Co. in the fields of North and Central Texas where it buys crude on a gravity basis, adjusted its prices to conform to those of the Humble Oil & Refining Co. and the Texas Co. for all schedules above 33° gravity. Below 33° gravities were unchanged.

December 18.—Gulf Pipe Line Co. met The Texas Co. prices in North and Central Texas, where crude is purchased on a gravity basis.

December 21.—Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth and Waterloo crudes 10 cents and Wooster 15 cents. Imperial Oil, Ltd., advanced Petrolia and Oil Springs, Canada, crudes 10 cents. Corning crude advanced 15 cents.

December 22.—Cabell and Somerset crudes advanced 15 cents.

December 26.—Seep Purchasing Agency advanced all grades of Pennsylvania crudes 25 cents.

December 27.—The Texas Co. in North and Central Texas and Oklahoma, where it buys crude on gravity scale, advanced its prices from 15 to 40 cents on a basis of four schedules; same company advanced Gulf Coast, Powell and Mexia crudes 25 cents; same company advanced

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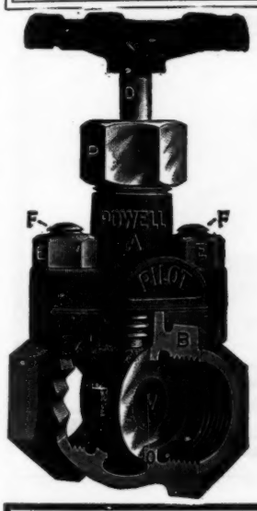

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North Louisiana and Smackover crudes 15 cents. The Humble Oil & Refining Co. in North and Central Texas met The Texas Co. prices for all grades above 33° gravity. Below 33° gravity, the Humble Co. advanced its two grades 10 cents. The same company advanced Powell and Mexia crudes 25 cents and Currie crudes 35 cents. Humble Oil & Refining Co. advanced Gulf Coast prices as shown in the table.

December 28.—The Magnolia Petroleum Co. in Kansas, Oklahoma and North and Central Texas, where it buys on a gravity basis, met The Texas Co.'s North and Central Texas and Oklahoma prices on all grades above 33° gravity; same company advanced its grades below 33° gravity, 10 and 15 cents, met Texas and Humble prices in Mexia and Corsicana light and advanced Corsicana heavy 10 cents. Cabell, Somerset light and Somerset medium, and Ragland crudes were advanced 10 cents.

December 29.—Standard Oil Co. of Louisiana made a general advance of 15 cents in north Louisiana and Arkansas crudes, meeting The Texas Co. prices announced December 27, in the same fields. The Atlantic Oil Producing Co. advanced Stephens, Ark., crude 15 cents.

December 31.—Seep Purchasing Agency advanced all grades of Pennsylvania crudes 15 cents.

HALT TAX COLLECTOR IN WEBSTER PARISH

SHREVEPORT, La., Jan. 26.—An order granting a preliminary injunction to the Gulf Refining Co., restraining A. H. Phillips, sheriff and tax collector of Webster Parish, from collecting taxes on oil in storage in the Gulf's tank farm at Dubberley, La., has been issued by Federal Judge Rufus E. Foster. The bond of the Gulf Refining Co. was fixed at $50,000 pending hearing of the case.

The tax collector also was restrained from attempting to collect the tax or from seizing, advertising or attempting to seize, advertise or sell any of the company's property. The injunction is the outgrowth of a clash between the taxing authorities of Webster Parish and the Gulf company over taxation of oil in storage at Dubberley.

The Gulf claims the oil is in transit and not subject to taxation by parish authorities. A suit is now pending over the taxes for 1922, and the company recently sought to restrain the sheriff from collecting the tax for 1923.

The taxes amount to approximately $26,000.

RUMANIA INCREASES OUTPUT

The production of crude oil in Rumania during 1923 increased steadily, and will probably reach a total of 1,500,000 metric tons (up to October 31 it was 1,256,000 tons), compared with 1,369,000 tons in 1922, with 1,163,000 tons in 1921, and with 1,800,000 tons in 1913. October and November monthly production was maintained at the September rate, 120,000 tons. On December 18 the Government passed a new law permitting a small increase in domestic petroleum prices, which should operate to enlarge production. Petroleum exports in October aggregated 31,000 tons, and in November 36,000 tons, compared with 35,000 tons in September. The export of refined products for the first 10 months of 1923 totaled 316,000 tons, against 363,000 tons during the corresponding period of 1922. Increased internal consumption and the effect of cuts in American prices were responsible primarily for this decline.

OPERATING JOLIET REFINERY

R. A. Irwin, president and general manager of the Pacific Petroleum Co., Chicago, has announced that his company is now operating the refinery of the Joliet Refining Co., at Joliet, Ill., at the rate of 650 barrels throughput daily.

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Teapot Lease Fair To the Government Casper Oil Men Say

CASPER, Wyo., Jan. 26.—A distinct feeling of antagonism is becoming apparent here over the recent statements anent the Teapot Dome lease to Harry Sinclair by the Government, among the oil men. This subject seems to be so misunderstood by the politicians in Washington that it is arousing caustic comment as to the fitness of Senators who make statements at variance with the facts in the case.

The Teapot Dome lease was practically the same as any other oil lease from a private individual to an oil operator; if anything, the terms of the Teapot lease are much stricter than the ordinary lease, the operating firm, (Mammoth Oil Co.) being held to perform work not required under an ordinary contract customary in the oil business. The statement that millions have been made by the holders of this lease is hardly borne out by facts for it is well known here and easily proven that the Mammoth Oil Co. has not paid out the initial cost of the operation in the Teapot Dome to date.

One of the main contentions appears to be that the matter of the lease negotiations was held quietly without advertisement. In ordinary leasing work, the matter of secrecy is paramount to the oil operator and it is certain that were an oil firm to make known its intention of endeavoring to lease a certain area, many other firms and promoters would make haste to secure part of the lands, thereby creating harm to the operators who expect to drill wells.

The Wyoming oil men, who are probably better conversant with the Teapot Dome conditions than the Washington politicians, are unanimous in their statements that the Teapot lease was fair to the Government, more so than many ordinary leases between oil operating companies and individual owners. Several prominent operators are frank in their statements that they would not care to contract to do the things that the Mammoth Oil Co. has agreed to do and, in spite of the fact that the Teapot Dome is not coming up to expectations, this firm is complying with all the conditions laid down in the terms of the lease without any attempts to evade or cut down the heavy expense and outgo of capital.

Teapot Dome is a large question mark now to the oil men. It has been disappointing to the oil fraternity as well as to the Mammoth Oil Co. and if the second Wall Creek sand holds all of the oil, the Mammoth Oil Co. is going to find itself deep in the hole when the development is finished. However, at present, the prospects appear bright for production in the sands underlying the second Wall Creek horizon. One of the greatest mistakes in the Salt Creek area is generally credited as that made by the Government when it held an auction some three years ago of isolated tracts on the east side of the field. This sale, according to experienced oil operators, admitted a large number of small operators into the field and has caused a direct loss to the Government in that a system of line protection for each tract sold has been made necessary and thereby some oil has been lost that would otherwise have been recovered if the whole area was under one firm's quotation. This factor is also shown in the recent merging of operations by several subsidiary firms of the Midwest and the doing away with about 3 miles of inner lease lines that would have necessitated drilling offset wells to the ultimate detriment of the production as a whole.

TEXAS OIL FOR ITALIAN NAVY

HOUSTON, Tex., Jan. 28.—The Humble Oil & Refining Co. has started the first of 10 tankers with a cargo of gasoline and fuel oil for the Italian Navy. The shipments will all be cleared within 15 days. The vessels will be loaded at the Baytown refinery of the Humble company.

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Pipe Line Statement for November Runs

Company—	Month	Daily Av.
*Prairie Pipe Line Co.	3,390,000	113,000
Gulf Pipe Line Co.	1,119,929	37,331
Texas Pipe Line Co. of Okla.	536,614	17,887
Magnolia Pet. Co.	910,574	30,352
Empire Pipe Line Co.	761,934	25,398
Cosden Pipe Line Co.	608,431	20,281
*Sinclair Pipe Line Co.	615,000	20,500
*Other lines	6,810,000	227,000
Total November	14,752,482	491,749
Total October	13,728,260	442,848
Difference	1,024,222	48,901

Shipments

Company—	Month	Daily Av.
†Prairie Pipe Line Co.	2,650,566	88,385
Gulf Pipe Line Co.	886,976	29,566
Texas Pipe Line Co. of Okla.	387,276	12,909
Magnolia Pet. Co.	720,799	24,026
Empire Pipe Line Co.	751,514	25,050
Cosden Pipe Line Co.	647,170	21,572
†Sinclair Pipe Line Co.	1,181,140	39,371
*Other lines	6,000,000	200,000
Total November	13,225,241	440,839
Total October	13,302,342	429,108
Difference	77,101	10,731

Stocks

Prairie Oil & Gas Co.	23,500,000
Prairie Pipe Line Co.	1,750,000
Gulf Pipe Line Co. & Gypsy Oil Co.	9,121,909
The Texas Co.	7,038,592
Magnolia Petroleum Co.	8,165,831
Empire Pipe Line Co.	2,872,447
Cosden Pipe Line Co.	3,338,901
Carter Oil Co.	17,922,771
*Sinclair Crude Oil Purchasing Co.	30,325,000
Other lines	4,800,000
Total November	108,835,451
Total October	108,071,221
Difference	764,230

*Estimated. †Includes shipments of Texas crude oil.

Note—Stocks do not include approximately 7,000,000 bbls. of crude oil held in storage on private tank farms and leases.

Daily Average Runs

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for November and December:

	Nov., '23	Dec., '23
Nat. Transit	178,880.95	180,363.54
S. W. Pa. P. L.	80,301.07	79,157.04
Eureka P. L.	345,268.16	358,438.80
Buckeye P. L. (Macksburg)	266,960.08	257,274.06
Buckeye P. L. (Cleveland)	15,777.99	15,419.37
Buckeye P. L. (Lima, etc.)	130,829.38	128,881.77
Indiana P. L.	13,120.99	11,555.82
Cumberland P. L.	368,174.21	364,727.40
N. Y. Transit	14,967.98	15,691.83
Tidewater P. L.	139,902.74	144,462.97
Pure Oil P. L.	179,108.65	181,806.87
Emery P. L.	31,556.95	31,157.28
Indian Ref.	292,637.55	291,762.78
Paragon Dev.	30,277.00	45,532.28
Pittsburgh P. L.	7,892.18	8,089.32
Riggs Ref.	.....	4,430.31
Union P. L.	24,630.71	24,988.93
Fords Br'k P. L.	645.36	602.48
Allegany P. L.	1,913.90	2,068.76
Total	2,122,845.75	2,147,413.61
Daily average	70,761.52	69,271.41

Note: Indian Refining Co. also reported other receipts of 86,516.22 Paragon Refining Co. had other receipts of 125,403.71 bbls. Paragon Development Co. had other receipts of 366.14 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for November and December:

	Nov., '23	Dec., '23
Nat. Transit	457,702.13	421,334.69
S. W. Pa. P. L.	284,651.72	291,869.78
Eureka P. L.	127,735.31	125,610.81
Buckeye P. L. (Macksburg)	95,645.60	61,221.73
Buckeye P. L. (Cleveland)	1,650.70	829.91
Buckeye P. L. (Lima, etc.)	666,847.26	613,417.44
Indiana P. L.	841,514.12	1,055,479.38
Cumberland P. L.	160,273.56	142,529.09
Southern P. L.	250.43	.....
Crescent P. L.	32,231.40	74,316.59
N. Y. Transit	298,254.77	459,280.57
Northern P. L.	37,609.12	21,003.34
Tidewater P. L.	142,737.44	192,814.03
Pure Oil P. L.	170,167.25	142,535.76
Emery P. L.	31,279.78	33,433.42
Paragon Ref.	110,589.28	132,066.32
Indian Ref.	415,340.50	482,066.55
Paragon Dev.	36,367.94	48,614.54
Pittsburgh P. L.	10,803.18	8,267.22
Union P. L.	18,604.71	28,217.95
Fords Br'k P. L.	609.77	393.85
Allegany P. L.	1,910.03	1,862.82
Total	3,942,776.00	4,337,166.26
Daily average	131,425.87	139,908.59

Note: Indian Refining Co. also reported other deliveries of 40,871.00 bbls.

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of November and December were as follows.:

	Nov., '23	Dec., '23
Nat. Transit	1,190,570.68	1,225,751.20
S. W. Pa. P. L.	743,388.59	710,075.69
Eureka P. L.	1,973,159.35	1,957,941.85
Buckeye P. L. (Macksburg)	476,597.93	560,577.30
Buckeye P. L. (Cleveland)	13,441.11	28,123.34
Buckeye P. L. (Lima, etc.)	4,312,302.50	3,884,990.13
Indiana P. L.	721,584.24	694,294.80
Cumberland P. L.	668,281.90	664,444.95
Southern P. L.	1,009,179.83	898,843.20
Crescent P. L.	83,400.95	99,435.12
N. Y. Transit	1,171,884.45	1,083,763.72
Northern P. L.	771,268.81	719,299.81
Pure Oil P. L.	331,262.95	369,820.56
Emery P. L.	6,790.85	4,700.93
Paragon Ref.	167,737.84	170,286.82
Indian Ref.	475,752.41	331,508.45
Paragon Dev.	8,403.46	9,451.90
Pittsburgh P. L.	8,879.34	8,831.70
Riggs Ref.	.....	970.27
Union P. L.	22,969.51	19,916.89
Fords Br'k P. L.	294.96	512.67
Allegany P. L.	574.41	819.88
Total	14,157,726.07	13,444,361.06
Decrease	346,384.46	713,365.01

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of November and December, showing the gross stocks of the above fields:

	Nov., '23	Dec., '23
Pennsylvania	3,818,921.71	3,936,846.09
Lima	916,253.97	977,079.18
Kentucky	1,900,641.05	1,814,965.15
Mid-Continent	6,937,331.92	6,391,317.89
Illinois	584,577.42	324,152.75
Total	14,157,726.07	13,444,361.06

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1920	1921	1922	1923
Jan.	56,004	64,460	67,702	75,790
Feb.	68,699	70,054	75,096	71,093
Mar.	67,745	68,555	78,531	76,592
April	64,589	65,036	75,462	75,614
May	63,937	65,466	77,592	77,265
June	68,750	62,438	76,193	77,592
July	66,489	59,486	76,435	71,879
Aug.	63,861	64,888	79,387	76,910
Sept.	68,102	60,110	78,512	72,358
Oct.	65,066	57,688	77,209	76,256
Nov.	62,758	58,470	75,313	70,762
Dec.	60,975	61,000	73,351	69,271

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1920	1921	1922	1923
Jan.	98,835	115,550	119,792	171,067
Feb.	107,146	96,736	111,382	164,219
Mar.	110,777	84,168	127,753	185,487
Apr.	114,090	101,015	127,068	179,751
May	110,219	100,253	127,840	177,102
June	102,598	105,037	137,638	173,598
July	112,340	97,096	137,872	168,330
Aug.	122,296	101,652	153,275	142,766
Sept.	127,131	117,440	158,761	137,266
Oct.	122,891	105,728	165,345	134,597
Nov.	117,730	121,803	165,677	131,426
Dec.	117,201	104,023	172,861	139,909

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1921	1922	1923
Jan.	7,916,353	16,297,868	14,944,247
Feb.	8,721,878	17,009,293	14,659,470
Mar.	9,818,766	16,877,937	13,871,146
Apr.	10,369,941	16,777,842	13,721,091
May	11,224,694	16,946,962	13,615,620
June	12,328,126	16,810,169	14,541,310
July	13,798,692	16,669,286	14,645,580
Aug.	15,155,633	16,235,229	14,778,230
Sept.	15,525,750	16,228,545	14,493,044
Oct.	15,761,079	15,757,746	14,394,121
Nov.	14,971,071	16,171,972	14,157,726
Dec.	15,854,741	14,323,765	13,444,361

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above.

1922—	Receipts	Shipments	Stocks
Dec.	3,076.36	1,292.84	81,910.23
1923—			
Jan.	2,798.55	2,461.36	82,256.42
Feb.	2,692.93	932.33	84,017.02
Mar.	2,978.88	12,417.00	74,578.90
Apr.	3,529.12	5,054.09	73,053.93
May	3,538.73	4,856.42	72,736.24
June	2,927.71	4,743.78	71,920.17
July	2,996.64	1,471.57	73,445.24
Aug.	3,199.07	3,769.34	72,874.96
Sept.	2,829.79	5,822.38	69,882.37
Oct.	2,694.23	5,251.81	67,324.79
Nov.	2,980.66	4,159.98	66,154.47
Dec.	2,893.07	3,499.37	65,548.27

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Jan. 1	2,942,702.94
Runs from wells	604,571.21
Other receipts	149,997.10
Regular deliveries	840,844.00
Other deliveries	418,296.70

The amount of Illinois oil run by the Tidewater Pipe Line Co. in December was 29,612.13 barrels, and deliveries were 61,698.35 barrels. Adding these figures to those of the Illinois Pipe Line Co., makes the runs and deliveries from the Illinois field as follows:

	Runs	Deliveries
1922—		
December	552,069.33	391,988.37
1923—		
January	599,239.86	470,956.04
February	496,421.79	393,346.13
March	625,006.81	473,598.75
April	521,916.87	433,541.40
May	624,107.98	532,514.00
June	532,511.83	388,137.77
July	594,653.42	439,384.37
August	594,747.94	367,153.33
September	542,561.59	395,195.40
October	576,867.09	347,152.33
November	546,859.43	285,692.09
December	534,185.04	252,542.43

The Tidewater Pipe Co., Ltd., also delivered in December 251,147.87 barrels of Oklahoma oil. The total deliveries of all grades by the Tidewater were 485,680.20 barrels.

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
August	116,067	51,709	688,488	222,873	151,970	1,231,104	.....	24,612	219,030	.....	243,642	1,474,746
September	205,600	47,400	516,200	124,200	126,600	1,000,000	.....	140,600	.....	.....	140,600	1,140,600
October	195,000	56,000	626,000	220,000	107,000	1,178,000	.....	208,090	.....	.....	208,090	1,386,090
November	136,731	36,281	659,169	156,800	85,169	1,074,031	.....	219,331	.....	.....	219,331	1,293,362

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	Baton Rouge New Orleans	Sabine Pass Pt. Arthur	Tampa	Total	All Ports Total
June	62,800	84,200	358,200	153,400	161,800	757,600	301,000	228,400	212,400	45,800	787,600	1,545,200
July	71,750	116,250	451,500	112,000	218,750	970,250	367,750	280,000	208,250	23,000	879,000	1,849,250
August	116,065	89,113	374,613	102,970	197,127	879,888	338,485	266,224	234,388	45,633	1,295,730	2,175,618
September	53,600	113,000	353,200	132,000	149,600	801,400	355,300	279,400	176,000	44,800	714,200	1,515,600
October	91,250	48,000	198,500	134,000	204,000	800,750	247,000	352,500	95,000	12,500	707,000	1,507,750
November	67,200	108,869	270,669	122,500	195,060	764,200	345,490	359,331	147,469	33,367	885,731	1,649,931

PRODUCTION BY MONTHS AND DAILY AVERAGE PRODUCTION IN THE U. S. FOR 12 MONTHS

1923—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Wyoming Montana	Other Fields	Totals
December:	Month	15,426,810	13,185,416	8,707,931	2,649,900	1,596,500	2,463,291	3,108,866	3,149,445	50,288,159
	Daily average	497,639	425,336	280,901	82,330	51,500	79,461	100,286	101,595	1,623,048
1923—										
January:	Month	16,457,445	13,328,574	8,881,009	2,826,611	2,317,002	2,428,018	3,124,707	3,423,516	53,786,882
	Daily average	530,885	425,817	286,484	91,181	74,742	78,323	100,797	110,436	1,703,665
February:	Month	16,426,759	12,045,020	7,663,992	2,748,660	2,258,984	1,084,008	2,932,193	2,907,340	48,066,956
	Daily average	586,670	444,465	273,714	91,622	80,678	67,286	104,364	104,405	1,716,250
March:	Month	19,608,192	13,955,828	8,462,783	2,847,040	2,970,575	2,312,600	3,374,778	3,464,529	56,996,325
	Daily average	632,525	450,188	272,993	91,840	95,825	74,600	105,638	111,759	1,838,708
April:	Month	20,695,959	14,398,810	8,403,240	2,768,052	2,766,000	2,160,300	3,584,048	3,381,240	58,058,649
	Daily average	689,865	479,987	280,108	89,292	92,200	72,010	109,573	115,947	1,935,286
May:	Month	21,535,365	15,655,782	8,932,000	2,805,750	3,389,000	2,175,000	3,566,600	3,546,400	61,606,297
	Daily average	694,689	505,122	288,129	93,525	109,323	70,161	115,051	114,400	1,987,731
June:	Month	22,667,106	15,572,730	8,817,000	2,797,830	3,078,990	1,981,800	3,385,600	3,401,400	61,702,456
	Daily average	755,570	519,091	293,900	93,261	102,633	66,066	122,853	113,380	2,056,758
July:	Month	25,262,082	15,260,184	10,662,000	2,448,566	2,859,000	2,012,000	4,143,400	2,735,400	65,486,632
	Daily average	814,906	492,264	343,935	78,986	92,226	64,903	133,657	89,955	2,116,333
August:	Month	26,440,005	14,049,076	11,454,000	2,316,320	3,113,000	2,078,000	4,130,000	3,472,300	67,192,701
	Daily average	852,903	453,196	369,484	74,720	100,419	67,032	133,226	112,043	2,164,283
September:	Month	25,762,500	13,813,320	12,287,000	2,234,130	3,350,000	1,955,000	4,449,500	3,303,800	66,815,250
	Daily average	858,750	427,074	409,567	74,471	111,666	65,134	148,317	103,760	2,226,051
October:	Month	24,576,000	12,961,782	14,903,000	2,336,346	3,046,100	1,861,000	3,460,000	3,468,200	66,612,428
	Daily average	792,787	418,122	480,742	75,366	98,263	60,032	111,613	111,877	2,148,787
November:	Month	23,397,848	12,334,630	15,158,000	2,268,840	2,723,000	1,786,000	4,573,300	3,135,700	64,377,318
	Daily average	746,595	411,154	505,267	75,628	90,767	59,533	153,443	104,523	2,146,591
	Twelve months	257,256,471	166,563,842	124,231,954	31,048,045	33,468,051	24,197,017	43,772,991	39,302,570	719,840,941
	Total daily average	704,812	452,800	340,636	85,063	91,694	66,293	119,396	107,678	1,968,372

an independent investigator reports

regarding the performance of

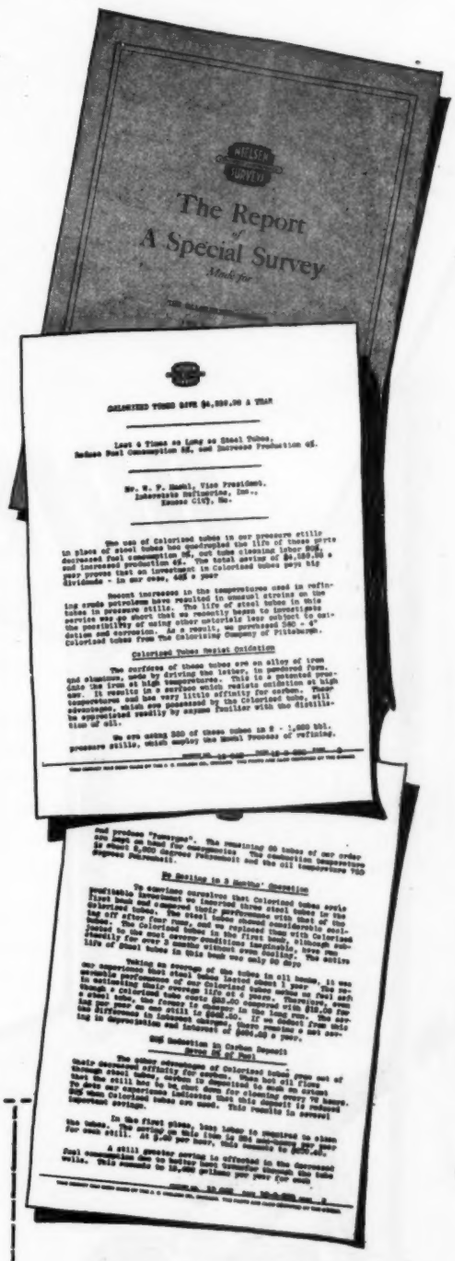
Calorized Tubes

Recently the A. C. Nielsen Company of Chicago, engineers, made an independent survey of the results of Calorizing in the Interstate Refineries, Inc. (Kansas City, Mo.) Their report shows that Calorized pressure still tubes are saving $4,539.98 a year.

The Interstate Refineries have in service two 1,000-bbl. pressure stills equipped with 300 Calorized tubes.

These tubes by resisting oxidation, last 4 times as long as ordinary steel tubes, saving $1,025 a year in tube renewal costs alone.

The Calorized tubes also decrease carbon deposits 20%, saving 5% of the fuel and $400.80 a year in cleaning. Still capacities have been increased 40% —a further saving of $2,206.80 a year. And 96-hour runs are now commonplace. This entire report is available for your examination. The figures quoted above do not begin to indicate the wealth of detail it contains—detail vouched for by Mr. W. F. Muehl, Vice-President of the Interstate Refineries, Inc. It may save you thousands of dollars to send the coupon for a copy of this report today. We shall be glad indeed to mail it.



The Calorizing Company

301 Oliver Bldg., Pittsburgh, Pa.

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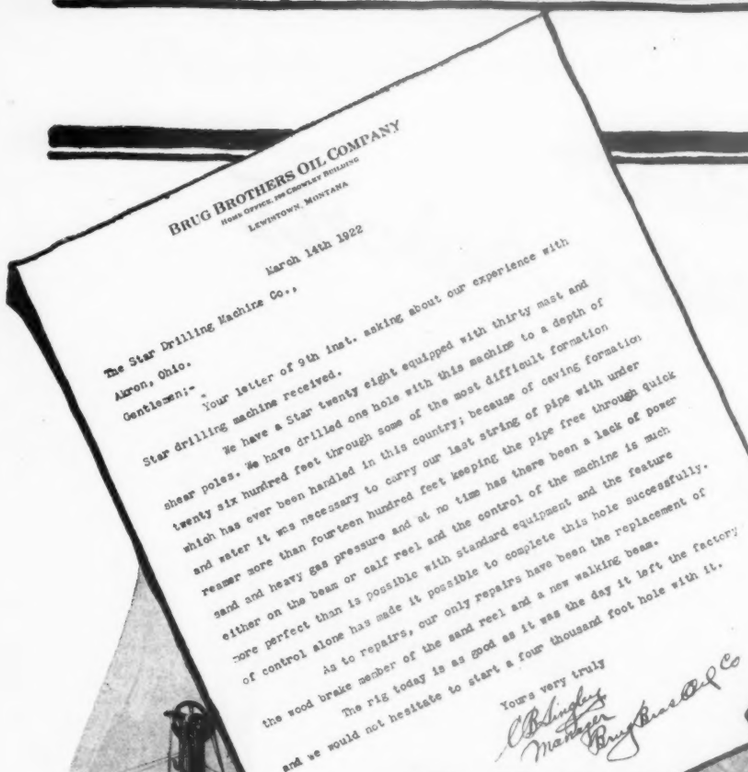


BRUG BROTHERS OIL COMPANY
HOME OFFICE, 208 CROWLEY BUILDING
LEWISTOWN, MONTANA

March 14th 1922

The Star Drilling Machine Co.,
Akron, Ohio.
Gentlemen:-

Your letter of 9th inst. asking about our experience with Star drilling machine received.

We have a Star twenty eight equipped with thirty mast and shear poles. We have drilled one hole with this machine to a depth of twenty six hundred feet through some of the most difficult formation which has ever been handled in this country; because of caving formation and water it was necessary to carry our last string of pipe with under reamer more than fourteen hundred feet keeping the pipe free through quick sand and heavy gas pressure and at no time has there been a lack of power either on the bean or calf reel and the control of the machine is much more perfect than is possible with standard equipment and the feature of control alone has made it possible to complete this hole successfully.

As to repairs, our only repairs have been the replacement of the wood brake member of the sand reel and a new walking beam. The rig today is as good as it was the day it left the factory and we would not hesitate to start a four thousand foot hole with it.

Yours very truly
C. B. Brug
Manager Brug Bros Oil Co

The "Star" DRILLING-MACHINE

FIELD PERFORMANCE—NOT CLAIMS—Is what counts in a Drilling Machine.

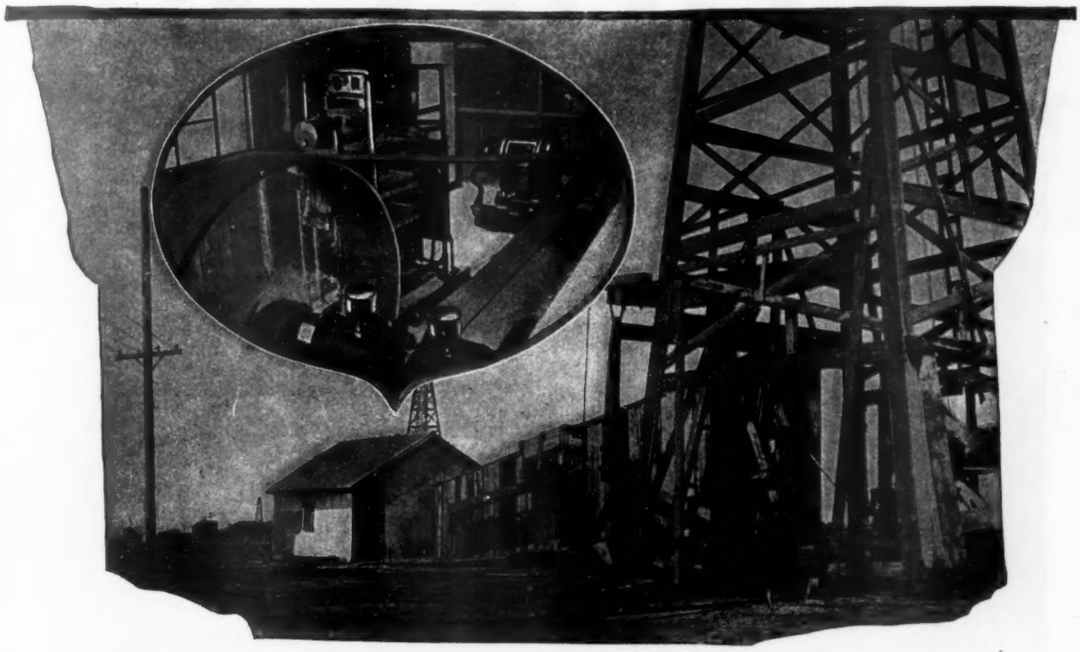
Every man whose duty it is to decide upon the type of Drilling Rig to buy must be guided either by his own experience or that of others in whom he has confidence.

Monthly, there will appear on this page a different letter from representative producers and contractors.

Profit by their experience: USE A STAR

The Star Drilling Machine Company,
Akron, Ohio

Branches: Chanute, Kan., Portland, Ore., Long Beach, Calif.
Export Office: 2 Rector St., New York, U. S. A.



Why Shut Down Your Lease?

Why quit producing for 55 days every year when it can be avoided? Practically every oil operator not yet pumping his beam-wells by electric drive is suffering this loss.

G-E motor drive decreases shut-downs and delays due to engine troubles, and its installation results in an average increase in production of at least 15%. The largest Kansas producer, now operating considerably more than 500 G-E two-speed oil well pumping motors, made this statement:

"Electric motors have more than paid for themselves within six months or a year on account of decreased shut-downs".

G-E two-speed oil well pumping motors have proved their worth in various operations in producing oil, and also in emergency drilling with small tools and in pulling casing. For drilling rigs, however, it is standard practice to use separate electrical equipment, installing a pumping motor as each well is completed.

The G-E oil well specialist in your district will be glad to give you additional testimony and to explain further the advantages of electric motor drive.

Technical papers 503 and 504 mailed on request.

General Electric Company
Schenectady, N. Y.
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GENERAL ELECTRIC

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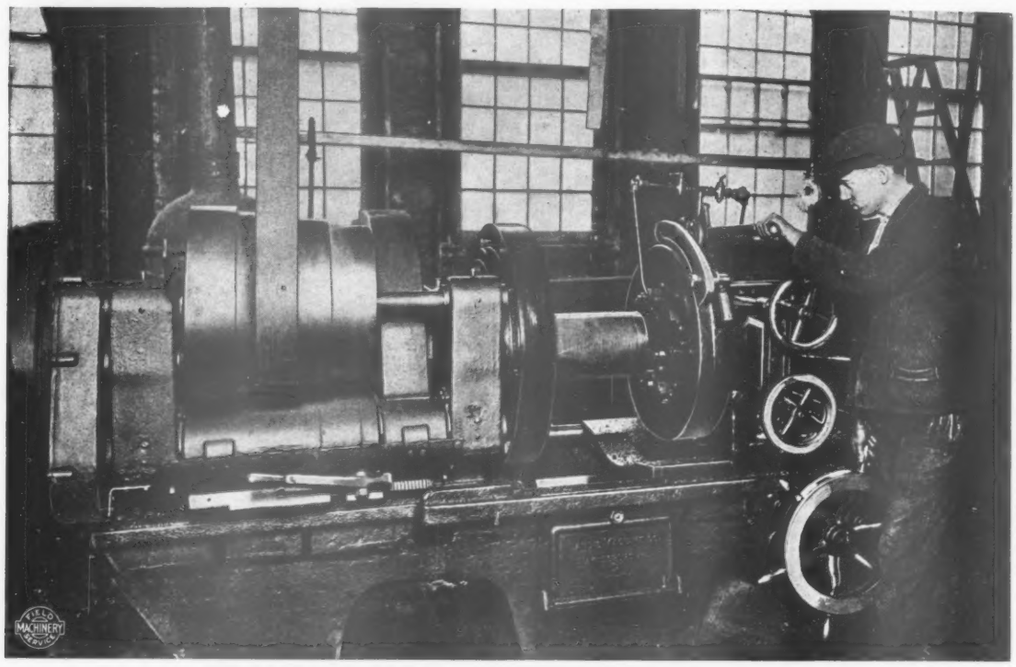
A "Landis" Threading Casing Nippers



Spang and Company, Butler, Pa., need no introduction as manufacturers of high grade drilling and fishing tools. It is logical, therefore, that their choice of pipe threading and cutting machines is Landis.

Landis Chaser

The picture shows one of several 8″ Landis Pipe Threading and Cutting Machines threading 8″ casing nippers. In addition vast quantities of casing and pipe are threaded on a manufacturing basis. The foreman says, "The Landis is fast, cheap to operate and cuts good threads, too."

The distinctive design of the Landis Chaser insures a uniform and correct taper on long casing threads. The line contact between chaser and stock makes for high cutting speeds and the length of the chaser gives a life many times that of any other type of die. Remember, too, that one set of chasers will thread any diameter within the range of a head as long as the pitch and taper of the thread remain the same.

We want to discuss Landis Threading Machines with you. Write us today.

LANDIS MACHINE COMPANY

WAYNESBORO, PA. U. S. A.

DOMESTIC AGENTS: Marshall & Huschart Machinery Co., Chicago, Ill.; Marshall & Huschart Machinery Co. of Indiana, Indianapolis, Ind.; Colcord-Wright Machinery & Supply Co., St. Louis, Mo.; R. B. Whitacre & Co., St. Paul, Minn.; Hamilton Machinery Company, Chattanooga, Tenn.; Seeger Machine Tool Co., Atlanta, Ga.; Young & Vann Supply Co., Birmingham, Ala.; Woodward, Wight & Co., New Orleans, La.; Jos. T. Ryerson & Sons, Houston, Texas; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.; Salt Lake Hardware Co., Salt Lake City, Utah; Herberts Machinery & Supply Co., San Francisco and Los Angeles, Calif.; Harry M. Euler Co., Portland, Ore.; Hallidie Machinery Co., Seattle, Wash.; Hallidie Co., Spokane, Wash.
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A TIGHT BONNET JOINT

is Built into the READING STEEL VALVE

Other Reading Features are:
Provisions for Temperature Stresses.
Clean Castings.
Ease of Operation.
Reliable Principles of Assembly.
Reduced Wear.
These are treated separately in other advertisements of this series, and collectively in an interesting booklet which will be sent on request.

A VALVE, like the line of which it is a part, must have few joints, and they must be tight. The Reading valve has no joint between the bonnet and yoke as they are cast integrally. The joint between the body and bonnet is a ground joint so made that the gasket may be omitted and gasket failures at high temperatures avoided. It is held tight with heat treated alloy steel bolts with a nut screwed on each end.

READING CAST STEEL VALVES AND FITTINGS

THE steel castings for valve parts and fittings require a specialized foundry practice to eliminate particularly porosity and gas bubbles. The Reading foundry practice is a development of over ten years specialization in this class of work. Reading cast steel fittings are manufactured for heavy duty services in which temperatures and pressures are high.

READING STEEL CASTING CO.
INCORPORATED
Reading Valve and Fittings Division
An Associate Company of the American Chain Company, Inc.
929 Connecticut Ave., Bridgeport, Conn.

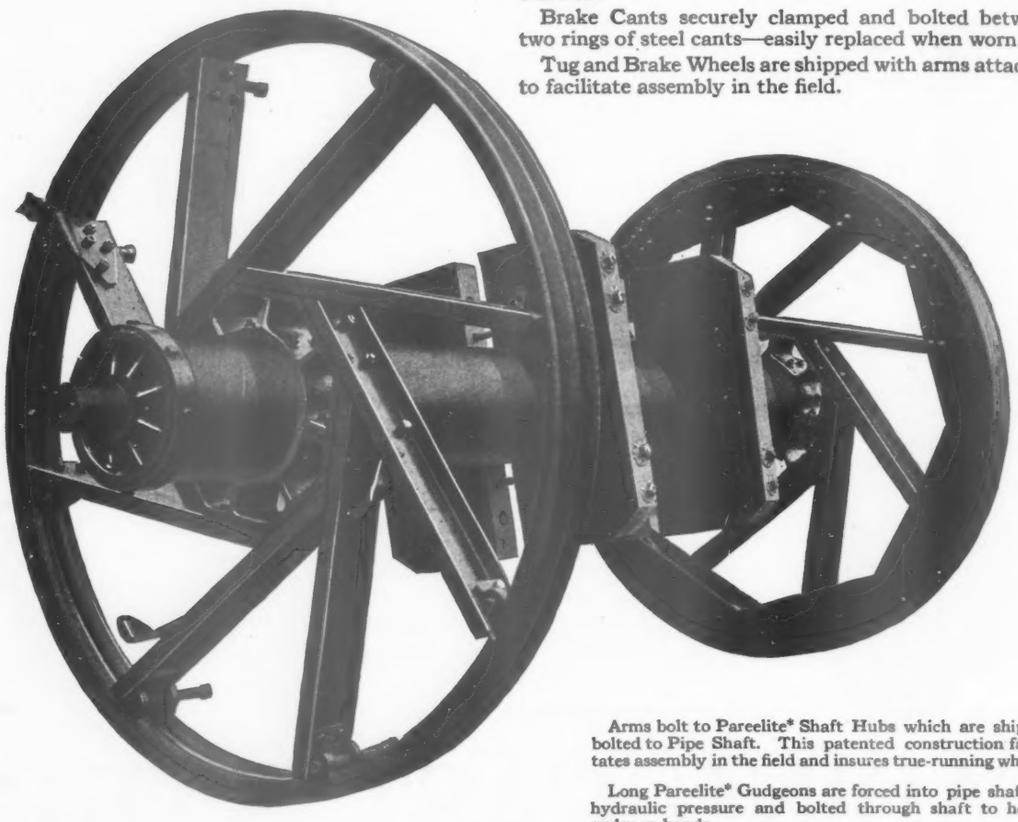
Boston	Chicago	Hartford	Philadelphia	St. Paul
Charlotte	Cleveland	Houston	Pittsburgh	Rochester
	Detroit	New York	San Francisco	

PARKERSBURG
METAL TUG
STEEL BULL WHEELS

"V"-Grooved Pareelite* Tug Rim affords positive traction.

Brake Cants securely clamped and bolted between two rings of steel cants—easily replaced when worn.

Tug and Brake Wheels are shipped with arms attached to facilitate assembly in the field.



Arms bolt to Pareelite* Shaft Hubs which are shipped bolted to Pipe Shaft. This patented construction facilitates assembly in the field and insures true-running wheels.

Long Pareelite* Gudgeons are forced into pipe shaft by hydraulic pressure and bolted through shaft to heavy gudgeon bands.

*Pareelite is a "High Manganese" metal—not cast iron—that will sustain a load of 4,320 pounds on arbitration test bar of American Society for Testing Materials, and with only 7/64 inch deflection at breaking point. It has an ultimate tensile strength of 33,680 pounds per square inch.

Parkersburg Metal Tug Steel Bull Wheels are made with standard length shafts and for 9-inch or 12-inch Brake Irons

Ask for detailed information

The PARKERSBURG RIG & REEL CO.

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Vogt Stills

Stand The Test

not only in the shop under the critical eye of the inspector—but also in continuous service with oil under pressure and at high temperature.

Vogt Stills Remain Tight

To this fact, the Country's leading refiners will testify.

HENRY VOGT MACHINE CO.
INCORPORATED
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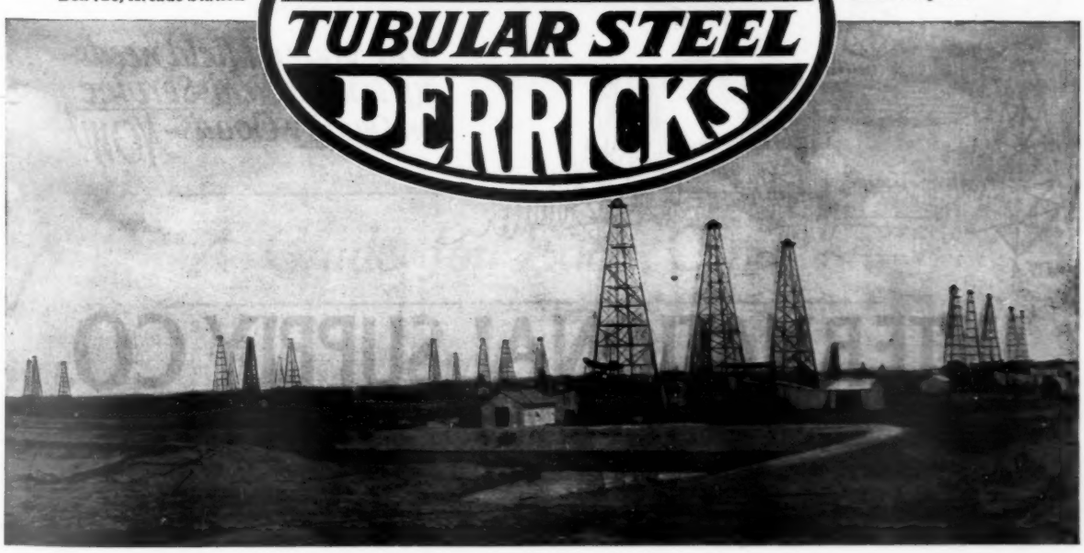

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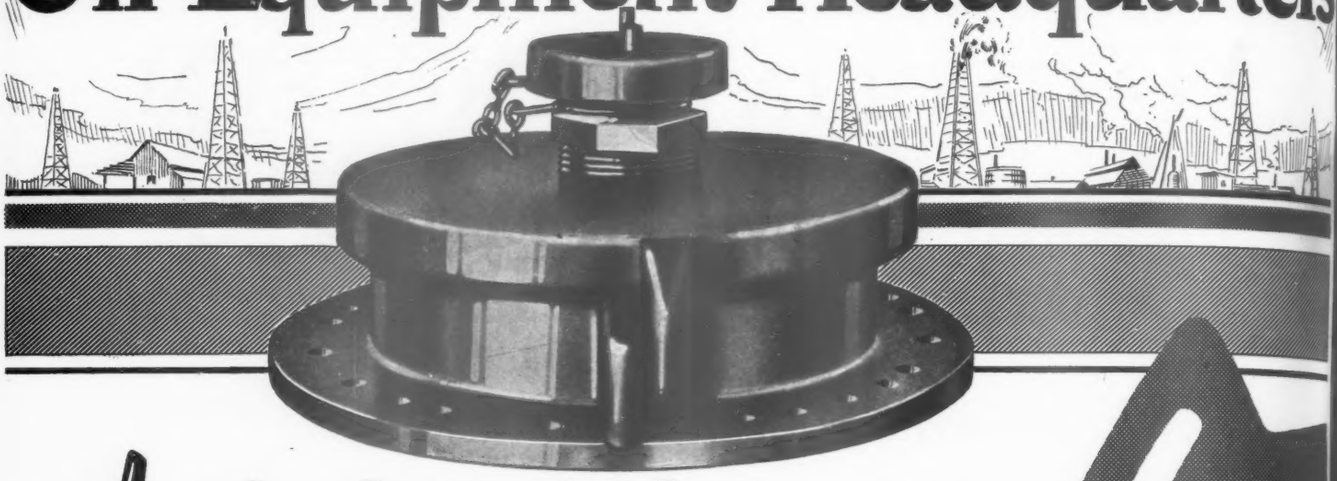

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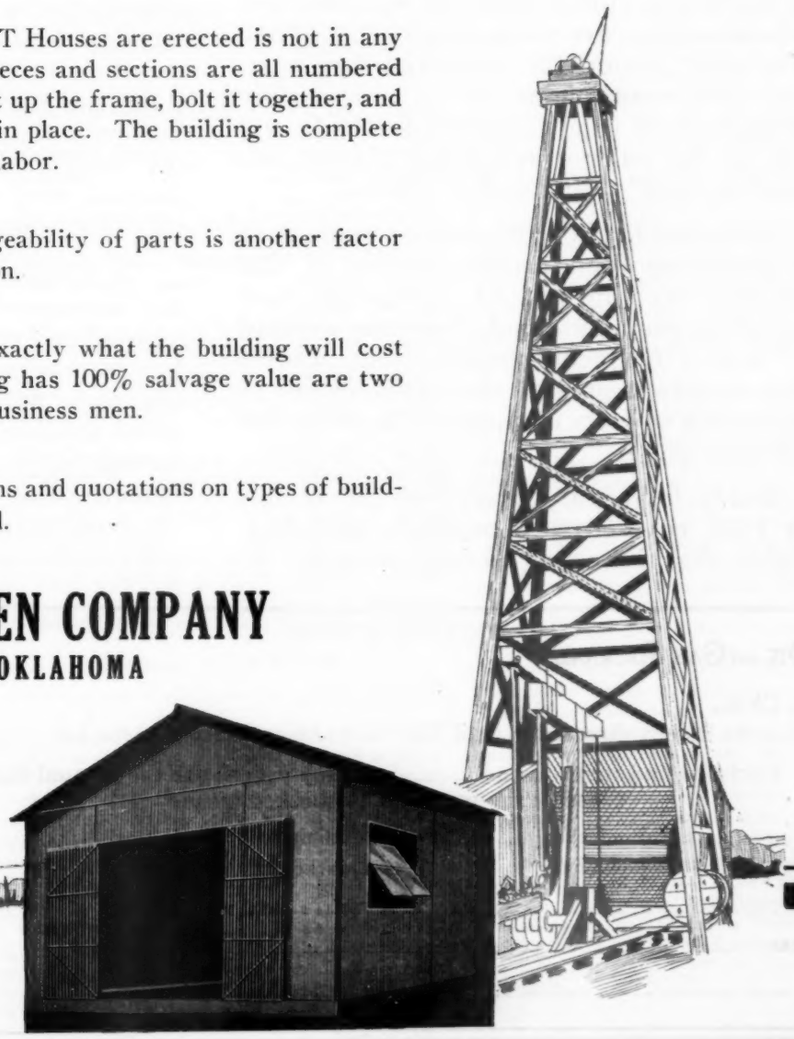

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Rule of Thumb or Reason?

The world is full of "rule of thumb" workers and business men. Fellows who feel their way from one step to another without ever stopping to think it out or figuring cause and effect. No wonder there are so many failures in business and so many incompetent workers.

The men who get ahead are the few who plan ahead, who carefully and painstakingly calculate what will probably follow their taking a certain step or course of action. This means, of course, that they must inform themselves, must study their work or their business, make it a hobby, keep pace with every development, each improvement.

There are as many rule of thumb men in the oil business as in any other. They are the first to suffer when the squalls come up because they are not weather-wise. They were chief among the casualties last year. They will continue to be so unless they abandon their rule of thumb methods and turn to the rule of reasoning things out, "getting wise" to cause and effects.

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